

A List of the Butterflies of Borneo with Descriptions of New Species.

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Part III.

(LYCAENIDAE).

Parts I and II of this list, dealing with the Nymphalidae and Lemoniidae only, were published by Mr. Shelford in this Journal in 1904 and 1905 (Nos. 41 and 45). Mr. Shelford being unable to continue it, suggested that I should do so—a task I have gladly undertaken. This Part deals with the whole of the Bornean Lycaenidae, the most numerous of all the Families in Bornean Rhopalocera. The growth in our knowledge of the Lycaenidae of this country may be seen from the following figures:—Mr. Distant¹ in his great work, *Rhopalocera Malayana*, gives 32 species of Lycaenidae from Borneo. Mr. W. B. Pryer² after some 9 years' collecting in British North Borneo could only record 35 species (1887); before that, Mr. Herbert Druce³ had recorded 71 collected in the neighbourhood of Labuan by Sir Hugh Low (1873); a number, which was increased to about 220 by Mr. Hamilton H. Druce⁴ (1895), who had examined a large amount of material in the Godman-Salvin collection together with the Kina Balu and Labuan captures made by Waterstradt and Wahnes. Mr. Druce⁵ published a second paper in 1896 increasing the total to 262; since that date some of the genera have been monographed and some new species described; including these and the species described for the first time in this paper, the total number of named forms and varieties now recorded from Borneo is 317; of which 300 are regarded here as true species. In comparison with these figures it may not be out of place to mention that de Nicéville and Martin⁶ recorded 238 Lycaenidae from Sumatra out of a total of 756 Rhopalocera; so we may regard our present list as having some pretensions to completeness.

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1. Distant, *Rhopalocera Malayana*, 1882.
 2. Pryer, *Annals and Magazine of Natural History*, 1887.
 3. Druce, *Proc. Zool. Soc. Lond.*, 1873.
 4. H. H. Druce, *Proc. Zool. Soc. Lond.*, 1895.
 5. H. H. Druce, *Proc. Zool. Soc. Lond.*, 1896.
 6. de Nicéville and Martin, *Journ. As. Soc. Beng.* Vol. LXIV, Part II, no. 3, pp. 357-555, 1895.

The system of classification followed in the first portion of this paper is that laid down by Col. Bingham in his volume on Indian Butterflies (*Fauna of British India Series, Butterflies*, Vol. II, 1907), which deals with five out of the seven Sub-Families occurring in this region. Of the remaining two Sub-Families, I have followed Mr. Bethune-Baker's recent monograph for the *Arhopalinae* ("A revision of the Amblypodia group of the Family Lycaenidae," *Trans. Zool. Soc. Lond.* Vol. XVII, pp. 1-153 Pl. I-V, 1903), and for the *Theclinae*, in the absence of any more up-to-date work, I have endeavoured to follow out the lines of classification suggested by Mr. de Nicéville in his *Butterflies of India*, Vol. III, 1890.

Mr. Shelford has kindly furnished me with a few field-notes, which I have added under his initials; and I am further indebted to him for much valuable advice and help received from time to time during the compilation of this paper. Dr. T. A. Chapman has kindly identified some of the Lycaenopsids for me, a difficult group unless one has devoted much study to its various species. To Mr. G. T. Bethune-Baker I owe thanks for help with some of the Arhopalas. And lastly, it is with much pleasure I take this opportunity of recording my indebtedness to Mr. Hamilton H. Druce, who has continually placed his valuable services at my disposal. Doubtfully identified species have been sent to him on and off for the last two years and without his help many little points would have still remained unravelled. The Superintendent of the Indian Museum has kindly supplied details of the Bornean Lycaenidae in the collections of that Museum.

Although the general system laid down by Mr. Shelford for Parts I and II, has been followed for this Part, I have considered it advisable to amplify it on one or two points. Thus in quoting the literature for each species I have given the reference to the original description first, then the name and reference of any species that has been proved synonymous; in cases where the original description being for one sex only, the other sex has been described elsewhere, I have given both references.

As Borneo is the third largest island in the world, it would seem superfluous to remark on the vagueness of "Borneo" as a habitat for any species, although this has sufficed for many writers on the different branches of the Fauna of Borneo. However, care has been taken in this paper to give as many *exact* localities as possible; so that by this means some traces of relationship may be indicated between the fauna of different parts of Borneo and the surrounding countries, and between the mountain fauna of Borneo and that, for instance, of Upper Burma and the Himalayas. The majority of localities are taken from the fine collection in the Sarawak Museum, and for that reason many of those names are of places in Sarawak. The same geographical order of names is always adhered to, *viz.* starting from Sandakan on the North-East coast, going round to the North of the island, then south-westwards

and taking in Mt. Kina Balu, through Lawas, Limbang, Brunei to the western limit of Sarawak territory; then south through Sambas, and Pontianak and so along the South coast to Bandjermasin and Pulo Laut where Mr. Doherty collected many species.¹

It is proposed to follow Mr. Shelford's original idea of reserving a discussion on the geographical distribution of Bornean Butterflies for an Appendix, to be added after the completion of the whole list. However, it will not be out of place to give here the following figures, which indicate some of the principal features of the distribution of Bornean Lycaenidae.

Out of the 300 species recorded, no less than 117 are at present confined to Borneo as far as we know. Of the remainder, 120 are common to Borneo and the Malay Peninsula (Burma to Singapore), 98 to Borneo and Sumatra, and 47 to Borneo and Java. The comparatively small relationship with the Philippines, Celebes and New Guinea (including Australia) is shown by the occurrence of 41, 13 and 14 Bornean species respectively in those countries.²

Due regard has been paid to the importance of recording any variations in all the forms, and the Sarawak Museum collection has been carefully examined for this purpose.

The following new species are now described for the first time. Those marked with an asterisk indicate that they were noted as new by Mr. Shelford, but not described, and I have retained his names for those species.

270. <i>Allotinus strigatus</i>	402. <i>Arhopala incerta</i>
272. <i>Allotinus borneensis</i>	428. <i>Arhopala sarawaca</i>
*498. <i>Charana? abnormis</i>	432. <i>Arhopala tembaga</i>
289. <i>Logania drucei</i>	451. <i>Arhopala shelfordi</i>
298. <i>Neopithecops oskewa</i>	452. <i>Arhopala rajah</i>
314. <i>Lycaenopsis lingga</i>	474. <i>Tajuria sunia</i>
*315. <i>Lycaenopsis nigerrimus</i>	486. <i>Chliaria balua</i>
318. <i>Lycaenopsis delapra</i>	497. <i>Charana splendida</i>
*354. <i>Lampides vyneri</i>	*498. <i>Charana? abnormis</i>
*381. <i>Poritia pasira</i>	506. <i>Horaga albistigmata</i>

Some of the Bornean Lycaenidae have been described from one sex only, and I am able to furnish descriptions of the hitherto-unknown sex of the following species:—

311. <i>Lycaenopsis sonchus</i> , H. H. Druce, ♀
316. <i>Lycaenopsis moultoni</i> , Chapman, ♀
326. <i>Nacaduba lugine</i> , Druce, ♀
327. <i>Nacaduba angusta</i> , Druce, ♀
341. <i>Lampides virgulatus</i> , H. H. Druce, ♀
379. <i>Poritia philura</i> , H. H. Druce, ♀

1. For a lucid and concise description of Sarawak localities see Shelford in *Strait Branch, Roy. As. Soc. Journ.* No. 35, p. 44, 1901.

2. Owing to our incomplete and uneven knowledge of the Butterfly Fauna of these countries these figures are necessarily inaccurate to a certain degree, but they serve to indicate the lines of relationship and to corroborate the conclusions arrived at by other writers on the various branches of the Bornean Fauna.

530. *Lehera anna*, H. H. Druce, ♂

537. *Deudorix strephanus*, H. H. Druce, ♀

The single plate accompanying this paper is reproduced from a photograph of Sarawak specimens by Mr. C. Jee Koo of the Sarawak Museum.

Sub-Fam. I. GERYDINAE.

This Sub-Family is practically confined to the Indo-Malayan Region and a glance at current literature¹ shows that its principal range is confined to the Malay Peninsula, Sumatra and Borneo, with headquarters in the last named country. Out of 62 species recorded from this region, no less than 33 are found in Borneo; Sumatra comes next with 23 species, the Malay Peninsula and Upper Burma with 16 and 18 respectively. But 7 species are found in Celebes, 9 in the Philippines and 7 in Java. Borneo has 18 species which are not found elsewhere.

Genus, GERYDUS, Boisduval.

257. *Gerydus gigas*, H. H. Druce.

Gerydus gigas, H. H. Druce, Proc. Zool. Soc. Lond., p. 559, pl. XXXI. fig. 3, ♂ (1895).

Mt. Kina Balu only.

Allied to *G. gigantes*, de Nicév., from North-East Sumatra.

258. *Gerydus innocens*, H. H. Druce.

Gerydus innocens, H. H. Druce, t. c. p. 560, pl. XXXI. fig. 4, ♂ (1895).

Mt. Kina Balu; Selinguid, near Batu Lawi (Sar. Mus.). The single Sarawak example is a female: colouring and markings agree well with Druce's figure of the male, but the fore-wings are more rounded at the apices and the hind-wings squared, suggestive of a tail as in *caudatus*.

259. *Gerydus improbus*, H. H. Druce.

Gerydus improbus, H. H. Druce, *op. cit.*, p. 651, pl. XXIX. figs. 1, 2, ♂ and ♀ (1896).

Mt. Kina Balu only.

Closely allied to *G. innocens*, Druce.

260. *Gerydus symethus*, Cr.

Papilio symethus, Cramer, Pap. Ex. ii. pl. CXLIX, figs. B, C, ♀ (1779).

1. These figures are obtained after consulting (i) Bingham, *Fauna Brit. Ind.*, *Butterflies*, Vol. II. 1907, (ii) Swinhoe, *Lepidopt. Ind.* Vol. VII. 1905-10, (iii) de Nicéville and Martin, *Butterflies of Sumatra*, 1895, and (iv) the present list of Bornean Butterflies. A search into further literature would no doubt show more species recorded from Java, Celebes and the Philippines, but it seems unlikely that any country will provide as many species of this Sub-Family as does Borneo.

Symetha pandu, Horsfield, Cat. Lep. Mus. E. I. C. pl. II, figs. 2, 2a-i. (1828).

Miletus zinckenii, Felder, Reise, Nov. ii. p. 284, pl. 35, fig. 34, ♂ (1865).

Sandakan, Labuan; Trusan and Pulo Laut (Sar. Mus.).

Distribution: Tenasserim; Moulmein and south of Mergui; Malay Peninsula and Archipelago; from Philippines to New Guinea.

[An example of this species was observed in May 1904 in the Botanic Gardens, Singapore, settled on a large leaf on which several ants were moving about. On a closer examination it was seen that both the ants and the butterfly were sucking the fluid secretion from the cloacal aperture of some small larval *Fulgoridae* or *Jassidae*. The larvae rested placidly whilst their attendant guests imbibed the presumably sweet fluid; but when disturbed they hopped off the leaf and were lost in the surrounding vegetation]. R. S.

Similar cases have been reported to me by native collectors during the last eighteen months in connection with other *Gerydinae* (viz. *Gerydus ancon*, *Allotinus horsfieldi*, *A. nivalis*, *Logania sriwa*, *L. drucei* and *L. staudingeri*)¹; and in May this year (1911) I was fortunate enough to make the observation myself.

The above observations are of some interest as affording a parallel to the case of *Allotinus horsfieldi*, Moore, which was observed by Col. H. J. W. Barrow, R.A.M.C., in attendance on *Aphidae* in India.²

The record of the two *Logania* species attending *Homoptera* is interesting because their legs are of normal length, while those of *Allotinus* and *Gerydus* are peculiarly long, and as remarked by Col. Barrow, are well adapted for standing over a mass of Aphides.

261. *Gerydus ancon*, Doherty.

Gerydus ancon, Doherty, Journ. As. Soc. Beng. p. 438, pl. 23, fig. 8 (1889).

A male and female, taken in the upper waters of the Limbang River, Sarawak, the latter near Batu Lawi (Sar. Mus.).

Only recorded from Tenasserim and Burma before. Bingham remarks on its rarity.

The Sarawak male differs from the mainland form in the white band on upperside of fore-wing *not* being completely interrupted by the junction of basal and hind-marginal fuscous colouring. Also the marginal dark line on the underside of hind-wing of the continental *G. ancon* male is replaced in the

1. Moulton. *Proc. Ent. Soc., Lond.* 1910. pp. xxxviii—xli.

2. *Fauna of British India: Butterflies.* Vol. II. 1907. p. 287.

Sarawak form by a line of spots and Swinhoe figures a similar line of spots for the female from Tenasserim. In other respects it agrees well with the excellent figure given by Swinhoe (*Lepidopt. Ind.* Vol. VII. pl. 612, figs. 2, 2b. 1910).

It is extremely close to *G. gigas*, H. H. Druce, but differs in the basal region of fuscous almost joining that of the hind-margin—one millimetre only separates them in the male; while in the female this fuscous area does not approach that of the hind-margin quite so much; in *gigas* the reverse is the case according to Druce's description. The swollen portion of the third margin quite so much; in *gigas* the reverse is the case according to Druce's description. The swollen portion of the third median nervule in the male is about one-fifth of an inch long as in *gigas*. It seems probable therefore that there are really three forms of *G. ancon*.

(i) The Tenasserim-Burma form in which the whole band of the fore-wing is completely divided (*G. ancon*, Doherty).

(ii) The Sarawak form in which it is nearly divided, culminating in the extreme form—

(iii) The Mt. Kina Balu form in which the white band of the fore-wing in the male is comparatively broad right across the wing (*G. gigas*, Druce). Until further specimens come to hand to confirm or refute these suggestions it is perhaps better to keep the two species (*ancon* and *gigas*) separate.

The male was reported by the native captor to have been in attendance on some immature *Homoptera*—probably *Jassidae*?—also captured and brought to me.

262. *Gerydus petronius*, Dist. and Pry.

Gerydus petronius, Distant and Pryer, Ann. Mag. Nat. Hist. ser. 5. XIX. p. 266 (1887).

Sandakan, British North Borneo.

This species is unknown to me. Bingham notes that it is very close to, if not identical with, *G. longeana*, de Nicév.

263. *Gerydus boisduvali*, Moore.

Miletus boisduvali, Moore, Cat. Lep. Mus. E. I. C. i. p. 19, pl. I a, fig. 1, ♀ (1857).

Miletus chinensis, Felder, Verh. zool-bot. Ges. Wien. xii. p. 488 (1862).

Miletus boisduvali, var. *ceramensis*, Ribbe.

Gerydus boisduvali, var. *acragas*, Doherty, Journ. As. Soc. Beng. p. 186 (1891).

Miletus irroratus, Druce, Proc. Zool. Soc. Lond. p. 106 (1874).

Borneo.

General distribution of var. *ceramensis* includes Celebes, Amboyna, Saigun, Buru and Borneo. That of the typical form is wider (though it does not include Borneo), ranging as it does over Sikkim, Assam, Upper and Lower Burma, Natuna Islands, Tenasserim, Hongkong, Sumatra, Java and Ceylon.

264. *Gerydus biggsii*, Dist.

Gerydus biggsii, Distant, Rhop. Malay. p. 206, pl. XXII. fig. 12, ♀ (1884).

Gerydus gopara, de Nicév., Butt. Ind. III. p. 25 (1890).

Sandakan (Pryer); Mt. Kina Balu (Waterstradt); Labuan (Low); Padas R., Mt. Marapok (Ind. Mus.); Limbang, Malinau, Banting, Tambak, Kuching, Bidi, Tegora, Pulo Laut (Sar. Mus.).

Distribution: Tenasserim, Malay Peninsula and Archipelago.

As regards the white band of the fore-wing, Druce remarks on the variability of its width; a comment, which is well borne out in a large series in the Sarawak Museum. The width of the band measured along the median nervure in six male examples varies from 6 mm. to 2.5 mm. In the females the variation is not so marked. In some the band extends to the costa, while in others it only just traverses the cell.

Quite common and taken all the year round in Sarawak.

265. *Gerydus philippus*, Staud.

Miletus philippus, Staudinger, Lep. Palaw. p. 92, pl. I. fig. 2 (1889).

Gerydus irroratus, Semper (*nec* Druce), Schmett. Phil. Insel. p. 162, pl. XXXI. figs. 10-12 (1889).

Trusan and Pulo Laut (Sar. Mus.); Labuan.

In this species the white marking of the fore-wing is also variable.

Described from Palawan.

266. *Gerydus vincula*, H. H. Druce.

Gerydus vincula, H. H. Druce, Proc. Zool. Soc. Lond. p. 561, pl. XXXI. figs. 9, 10, ♂ and ♀ (1895).

Borneo.

Genus, *ALLOTINUS*, Felder.

267. *Allotinus horsfieldi*, Moore.

Miletus horsfieldi, Moore, Cat. Lep. Mus. E. I. C. i. p. 19, pl. I a. fig. 2, ♂ (1857).

Paragerydus horsfieldi, Distant, Rhop. Malay. p. 207, pl. XX. fig. 7, ♀ (1884).

Sandakan; Mt. Kina Balu; Labuan; Lawas, Trusan, Banting, Tambak, Kuching (Sar. Mus.); S. E. Borneo (Wahnes).

Distribution: Tenasserim to Malay Peninsula and Archipelago.

One of the commonest *Gerydinae* in Sarawak. De Nicéville and Martin remark the same of it in Sumatra.

268. *Allotinus melos*, H. H. Druce.

Paragerydus melos, H. H. Druce, Proc. Zool. Soc. Lond. p. 602 (1896).

Cagayan.

Mr. Druce observes that this species is closely allied to *A. horsfieldi*, Moore.

269. *Allotinus waterstradti*, H. H. Druce.

Paragerydus waterstradti, H. H. Druce, *op. cit.* p. 562, pl. XXXI. figs. 1, 2, ♂ and ♀ (1895).

Mt. Kina Balu; Sapagaya (Cator); South Borneo (Ind. Mus.).

- 269a. *Ab. absens*, Druce (*l. c.*).

Mt. Kina Balu.

270. *Allotinus strigatus*, n. sp.

MALE. *Upperside*. Dark brown. *Fore-wing*: uniform dark brown, except for an ovoid patch beyond cell; this patch is less defined and more ovoid than in *A. horsfieldi*, Moore; the four light costal spots, present in that species, are also to be seen in *strigatus*. *Hind-wing*: uniform dark brown; hind margin rounded, less crenelated than in male *horsfieldi*. *Underside*. Light grey-brown ground-colour crossed by transverse lines of brown strigae and further darkened by many small brown spots and slender strigae. *Fore-wing*: three short broken lines are formed by transverse strigae at base, centre and end of cell; these are succeeded by a well marked sub-marginal series of inter-nervular strigae. Hind-margin is bordered by a line of small inter-nervular black-brown spots outwardly touched with whitish-grey. Inner marginal region more or less devoid of spots or strigae. *Hind-wing*: a small brown spot at base, succeeded by a broken concave series of three larger spots across the basal region; these in turn succeeded by a more pronounced line of five strigae across the discal area; followed by a sub-marginal concave series of six lunular transverse strigae; marginal black-brown spots as in fore-wing. Cilia light grey-brown as in ground-colour.

FEMALE. *Upperside*. Uniform dark fuscous. *Underside*. Markings and coloration as in the male. Hind-wings rounded as in the female of *horsfieldi*.

Exp. al. ♂, 38 mm.; ♀, 36 mm.

Types, ♂ and ♀, from Pulo Laut and Kuching (Sar. Mus.).

These and another male captured near Kuching in 1895 are the only three examples at present known.

271. *Allotinus pyxus*, de Nicév.

Paragerydus pyxus, de Nicéville, Journ. As. Soc. Beng. Vol. XLIII. pt. 2. No. 1. p. 27, pl. V. fig. 2, ♂ (1894).

Borneo: Sandakan, Sapagaya, Melikop, Labuan.

"Described from a single example received from the late Mr. W. Davison." (de Nicév. *l.c.*).

Mr. Druce (*Proc. Zool. Soc. Lond.* p. 652, 1896) reports several specimens from the above mentioned localities.

272. *Allotinus borneensis*, n. sp.

MALE. *Upperside*. Dark brown. *Fore-wing*: uniform dark brown, except for an elongated narrow discal streak, starting on the median nervure at base of second median nervule, and continuing along the third median nervule to a point 2—3 mm. from the hind-margin. Four whitish, generally indistinct, spots along the outer edge of costa as in *A. horsfieldi*, Moore. *Hind-wing*: uniform dark brown. *Underside*. Light drab ground-colour, covered with small brown transverse strigae and spots, which give a light-brown mottled appearance. *Fore-wing*: three transverse strigae—at base, centre and end of cell—are slightly larger than the rest. Inner marginal area is free from spots and strigae. Hind-margin bordered by a row of seven small inter-nervular black-brown spots, outwardly edged with creamy white; the two spots nearest the apex have an additional touch of black-brown on the outer edge of the white. *Hind-wing*: basal and inner-marginal region slightly freer from spots and strigae. Fusion of spots forms three large strigae situated above and below the second sub-costal nervule and at end of cell; a rough sub-marginal row of smaller transverse strigae; hind-marginal row of small black-brown spots as in fore-wing, except that the whitish outer edging is very much reduced. Cilia light drab as ground-colour in both wings. Antennae, head, thorax and abdomen concolorous with the wings; below: palpi, thorax and abdomen whitish.

FEMALE. *Upperside*. Dark-brown. *Fore-wing*: uniform dark-brown. Four whitish spots along the outer edge of the costa as in the male. *Hind-wing*: uniform dark-brown. Much more square than the male, a peculiarity which is formed by the extension of the third median nervule into the anal angle so as to suggest a rudimentary tail.¹

1. Druce remarks on *A. caudatus*, female, that this extension of the third median nervule so as to form a blunt tail, distinguishes that species (*caudatus*) from all others in the genus. Mr. Druce who kindly examined this species for me, remarks that it is unknown to him, so that *borneensis* is the third "tailed" *Allotinus* to be described, for the female of *A. panormis*, Elwes, also has this peculiarity.

Underside, as in male. Antennae, palpi, head, thorax and abdomen as in male.

Exp. al. ♂, 46 mm.; ♀, 41 mm.

Types, ♂ and ♀: Kuching and Mt. Saribu, Sarawak (Sar. Mus.).

Sarawak: Mt. Saribu, Kuching and Mt. Matang—2000 ft. (Sar. Mus.).

As yet only known from Sarawak.

273. *Allotinus moorei*, H. H. Druce.

Miletus moorei, Staudinger, M. S.

Paragerydus moorei, H. H. Druce, Proc. Zool. Soc. Lond. p. 562, pl. XXXI. figs. 5, 6, ♂ and ♀ (1895).

Mt. Kina Balu; Sarawak and S. Borneo (Ind. Mus.).

274. *Allotinus taras*, Doherty.

Paragerydus taras, Doherty, Journ. As. Soc. Beng. Vol. LVIII. Pt. 2. p. 437, pl. XXIII. fig. 10, ♂ (1889).

S. E. Borneo: north of Banjarmasin (Wahnes).

Distribution: Tenasserim, Chittagong Hill-tracts. And probably from the Malay Peninsula, as Mr. Doherty notes that an apparently identical form occurs there and in S. E. Borneo.

275. *Allotinus caudatus*, Grose-Smith.

Allotinus caudatus, Grose-Smith, Ann. Mag. Nat. Hist. ser. 5. Vol. XII. p. 34 (1893).

Mt. Kina Balu; British North Borneo, Sadong, Kuching and Lundu (Sar. Mus.).

The example (a ♀) from British North Borneo is remarkably small, measuring only $1\frac{1}{8}$ inch, while the type female is $1\frac{2}{8}$ inch.

276. *Allotinus fabius*, Dist. and Pryer.

Paragerydus fabius, Distant and Pryer, Ann. Mag. Nat. Hist. ser. 5. Vol. XIX. p. 266 (1887).

Sandakan (Pryer); North Borneo (Ind. Mus.).

Druce suggests that it may turn out to be the same as the preceding species, though he notices that Distant does not describe a projecting third median nervule, which is a distinctive character of *caudatus*. Swinhoe regards the two species as identical. Unknown to me.

277. *Allotinus aphocha*, Kheil.

Allotinus aphocha, Kheil, Rhop. Ins. Nias, p. 28, pl. V. fig. 30 (1884).

Mt. Kina Balu, Labuan; Sarawak: Limbang, Saribas, Tambak, Quop, Santubong and Kuching (Sar. Mus.).

Extends to Nias Island from where it was originally described.

It seems to be fairly common in Sarawak from March to October.

278. *Allotinus subviolaceus*, Feld.

Allotinus subviolaceus, Felder, Reise, Nov. Lep. II. p. 286, pl. XXXV. figs. 27, 28 (1865).

Allotinus alkamah, Distant, Rhop. Malay. p. 452, pl. XLIV. fig. 3, ♂ (1886).

Allotinus subvioletescens (*sic*), Swinhoe, Lepidopt. Ind. p. 196, pl. 616, figs. 1, *a*, *b*, ♂ and ♀ (1910).

Sandakan, Mt. Kina Balu, Kuching and Mt. Matang—3200 ft. (Sar. Mus.).

Distribution: Tenasserim to Malay Peninsula and Archipelago.

279. *Allotinus audax*, H. H. Druce.

Miletus audax, Staudinger, M. S.

Allotinus audax, H. H. Druce, Proc. Zool. Soc. Lond. p. 564, pl. XXXI. figs. 11, 12, ♂ and ♀ (1895).

Mt. Kina Balu only.

280. *Allotinus unicolor*, Feld.

Allotinus unicolor, Felder, Reise, Nov., Lep. II. p. 286 (1865).

Sandakan (Pryer).

This species also occurs in Singapore.

281. *Allotinus nivalis*, Druce.

Miletus nivalis, Druce, Proc. Zool. Soc. Lond. p. 318 (1873).

Logania substrigosa, Moore, Journ. As. Soc. Beng. p. 22 (1884).

Sandakan; Mt. Kina Balu; Labuan; Kuching (Sar. Mus.); S. E. Borneo.

Distribution: Tenasserim southwards to Mergui; Malacca, Sumatra and Nias.

Druce suggests that *substrigosa*, Moore, may be a distinct species as the type and all other specimens examined by him from Borneo have the black spot on the costa of the hind-wing below replaced by a pale brown one. An examination of many specimens in the Sarawak Museum does not uphold this; as in some the spot is light brown, in others very dark brown, and in one the scales forming the spot are undoubtedly black.

A very common species near Kuching, Sarawak.

282. *Allotinus nicholsi*, sp. n.

MALE. *Upperside*. Uniform rich brown fuscous. *Underside*. Light ground-colour densely irrorated with minute brown scales. *Fore-wing*: a rough sub-marginal line formed by little fasciae of brown scales from costa to inner margin, slightly curved inwards towards costa. A hind-marginal line of small

dark-brown internervular spots. *Hind-wing*: a rough discal line from costal nervure across cell to inner margin; a slender fascia closing cell; an indistinct fascia at one third the length of costa from apex; a submarginal, much-interrupted line of outwardly oblique fasciae from radial nervule to inner margin. Small black internervular spots along hind-margin as in forewing. Cilia brown fuscous.

Exp. al. 27 mm.

Type. Male (and only known example) from Quop, Sarawak (Sar. Mus.).

Named after the Rev. Nicholas formerly S. P. G. missionary at Quop.

The delicacy of the irrorations on the underside point to the relation of this species to *A. subriolaceus*, Feld., but the brown fasciae in that species are much more pronounced than in *nicholsi* where they are hardly perceptible. Mr. Druce kindly examined this specimen for me and reported it as unknown to him.

Genus, LOGANIA, Distant.

283. *Logania regina*, Druce.

Miletus regina, Druce, Proc. Zool. Soc. Lond. p. 348, pl. XXXII. fig. 4 (1873).

Sandakan (Pryer); Melikop and Banguay Island (Cator); Labuan (Low).

Mr. Druce remarks on the proximity of this species to our next species.

284. *Logania sriwa*, Dist.

Logania sriwa, Distant, Ann. Mag. Nat. Hist. ser. 5. Vol. XVII. p. 531 (1886).

Sarawak: Kuching (Sar. Mus.); Pulo Laut (de Nicéville). Taken all the year round commonly.

Distribution: Malacca, Perak and Sumatra.

A beautifully protected species when at rest with wings closed on the upperside of a leaf. I have noticed how conspicuous it is when flying some 5 to 8 feet up among the trees, and then, on settling, how it completely disappears. The white streak on the underside helps wonderfully to break the outline of the insect and so render it invisible.

285. *Logania marmorata*, Moore.

Logania marmorata, Moore, Journ. As. Soc. Beng. p. 22 (1884).

Pulo Laut (de Nicéville).

Distribution: Tenasserim and Mergui Archipelago. Sumbawa (Doherty).

De Nicéville suggests that this species cannot stand as a species distinct from *L. sriwa*, Dist. "and that most likely the

'*Miletus lahomius* of Kheil (Rhop. Insel. Nias p. 27. n. 77, pl. V. figs. 28, 29, (1884), from the Island of Nias, will hereafter be proved to be another synonym of the same species." (*Journ. As. Soc. Beng.* LXIII. Pt. II. No. 1. p. 29).

286. *Logania malayica*, Dist.

Logania malayica, Distant, Rhop. Malay. p. 208. n. i. pl. XXII. fig. 21, ♀ (1884).

Sandakan (Cator); Lundu, Sambas, Pulo Laut (Sar. Mus.); S. E. Borneo (Doherty).

Distribution: Malay Peninsula, Sumatra and Philippine Islands.

287. *Logania distanti*, Staudinger.

Logania distanti, Staudinger, Lep. Palaw. p. 93, pl. 1, fig. 3, ♀ (1889).

Logania obscura, Distant and Pryer, Ann. Mag. Nat. Hist. ser. 5. Vol. XIX. p. 266 (1887) [nom-praeocc.].

Sandakan (Pryer).

Palawan and Philippine Islands.

Mr. Druce informs me that *obscura*, Distant, seems to have a whitish suffusion over the hind-wing above which is not present in *distanti*, Staudinger; but he doubts their specific distinction.

288. *Logania staudingeri*, H. H. Druce.

Logania staudingeri, H. H. Druce, Proc. Zool. Soc. Lond. p. 565, pl. XXXI. figs. 13, 14, ♂ and ♀ (1895).

Mt. Kina Balu (Waterstradt); Kinabatangan, North Borneo, and Mt. Matang—2000 ft. (Sar. Mus.).

289. *Logania drucei*, n. sp. (Fig. 9, ♂).

MALE. *Upperside*. Dark fuscous, relieved by small circular blue-white discal patch in fore-wing situated across the base of the three median nervules, but not reaching the cell, discocellular nervule or submedian nervure. Cilia dark fuscous. Hind-margin of fore-wing uneven, of hind-wing very slightly scalloped at the anal angle. *Underside*. Partly tawny-fuscous, part plumbous-fuscous. *Fore-wing*, with two transverse striae: one rather indistinct across the cell, the other, well-defined, closing the cell. The costal half of the fore-wing is tawny fuscous, the remainder plumbous-fuscous. *Hind-wing*: irregular and indistinct transverse striae below costa and at base, succeeded outwardly by a well-defined reniform spot below the costa and two indistinct and irregular striae closing cell and joining inner margin; an irregular post-discal chain of indistinct transverse striae. Cilia dark fuscous.

FEMALE. *Upperside*. Large blue-white discal patch in fore-wing, with dark fuscous apical area from costa to anal angle and slightly diffuse along the inner margin; light fus-

cous scales at base of fore-wing. Hind-wing, fuscous with plumbous tinge across the disc to inner margin. Apex of fore-wing more obtuse and hind-margin more rounded than in the male. *Underside.* As in male, except that the striae are more distinct, and that a hind-marginal row of indistinct dark spots can be seen in both wings.

Exp. al. ♂, 25 mm., ♀, 24 mm.

Types. (Male and female) Matang Road, near Kuching, Sarawak, February 22nd and 23rd, 1911 (Sar. Mus.).

Taken commonly in the same locality during the first four months of the year (1911). Dedicated to Mr. H. H. Druce to whom I owe much for continued help in the preparation of this paper. He examined this species (among many others) for me and writes that, in his opinion, it is quite distinct from *L. massalia*, Doherty, although allied to it—a species which occurs in the Malay Peninsula, Java and Sumatra. He notes that in *drucei* the discal spot above is much bluer and more defined, and below, the ground colour appears to be plumbous white, which is not the case in *massalia*; further, that the margins are more even than in *massalia*, where they are slightly scalloped, while in *staudingeri* and *distanti* they are more scalloped.

One of the females has a small piece out of the anal angle of the left hind-wing, suggestive of an attack made by a bird or lizard enemy. It is curious that out of some 200 *Gerydinae* examined, this is the only specimen bearing any signs of an attack.¹

1. For the importance of recording the evidence of attacks made on butterflies by their enemies and for an interesting discussion on this problem, see *Essays on Evolution* by Professor E. B. Poulton, F. R. S. 1908. pp. 70, 281-3, 304 and 325. It is due to the suggestive remarks of Professor Poulton that I have carefully noted all the signs of injuries exhibited in the Bornean Lycaenidae examined by me, descriptions of which will be found throughout this paper. The accumulation of such records is of general value in helping to refute certain statements made now and again in entomological circles, namely that butterflies are *not* subject to such severe attacks as has been frequently claimed; the authors basing their statements as a rule on the paucity of *direct* observations, without taking into account the mass of *indirect* evidence, which, though available in most large collections, is not often recognized, or the important evidence adduced from the examination of birds' stomachs for instance. The special interest of the observations made in this paper lies in the support given by them to the theory of Directive Markings, eg. as exhibited by the anal markings and tails in many *Theclinae*, which are rendered conspicuous in order to direct an enemy's attack to a non-vital part. Hence the absence of attacks noted on the *Gerydinae*, which rely on a different method for protection, namely that of pro-ryptic colouring. (See concluding paragraph on this subject under 553.—*Virachola similis* on page 173 of this paper). That there are relatively few instances noted in this paper is due to the fact that nearly all the specimens examined belong to a collection of "naturally selected" good specimens—the careful work of native collectors and Museum Curators for the last 20 years! I should also add that no mention is made of worn and damaged specimens, whose injuries might be attributed to other causes.

Sub-Family II. LYCAENINAE.

Genus, CYANIRIOIDES, de Nicéville.

290. *Cyanirioides libna*, Hew.*Hypolycaena libna*, Hewitson, Ill. Diurn. Lep., Lyc. Supp. p. 15, pl. V. (Supp.) figs. 39, 40, ♀ (1869).*Cyanirioides libna*, H. H. Druce, Proc. Zool. Soc. Lond. p. 565, ♂ (1895).

Sandakan (Hewitson) ; Mt. Matang, Sarawak (Sar. Mus.).

De Nicéville (*Butt. Ind.* p. 32.) says it is probably the same as an Indian species—*Logania andersonii*, Moore, *i.e.*, a member of the Sub-Family *Gerydinae*.Druce (*l.c.*), from an examination of a male, places it next to *Porilia*, to which genus he says it is closely allied, *i.e.*, a member of the Sub-Family *Poriliinae*.A careful examination, however, of the single Sarawak example shows that it undoubtedly belongs to the Sub-Family *Lycaninae*, as defined by Bingham (*Faun. Brit. Ind.* Vol. II. p. 284).

Genus, HYPOCHRYSOPS, Felder.

291. *Hypochrysops coelisparus*, Butler.*Miletus coelisparus*, Butler, Ann. Mag. Nat. Hist. ser. 5. Vol. XII. p. 159 (1883).

Sandakan and Libaran Island (Cator).

Unknown to me.

Genus, PITHECOPS, Horsfield.

292. *Pithecopis hylax*, Fab.*Papilio hylax*, Fabricius, Syst. Ent. p. 526. n. 351 (1775).

Mt. Kina Balu ; Labuan ; Kuching, Mt. Matang (Sar. Mus.) ; Mt. Marapok and South Borneo (Ind. Mus.) ; near Banjarmasin.

Distribution: Sikkim to Malay Peninsula and Archipelago.Horsfield notes that the larva feeds on a leguminose plant, and that he gave it the name *Pithecopis* on account of the curious resemblance of the pupa to the face of a monkey.

De Nicéville records its "weak fluttering flight" in heavy forest only.

Genus, SPALGIS, Moore.

293. *Spalgis epius*, Westw.*Lucia epius*, Westwood, Gen. Diurn. Lep. Vol. II. p. 502, pl. LXXVI. fig. 5, ♀ (1852).

Mt. Kina Balu (Waterstradt); North Borneo (Sar. Mus.).
Distribution: India, Ceylon, Burma and Penang.

294. *Spalgis nubilus*, Moore.

Spalgis nubilus, Moore, Proc. Zool. Soc. Lond. p. 522
 (1883).

Sandakan (Pryer); Labuan (Wahnes).

Distribution: Ceylon; the Andamans and Nicobars.

De Nicéville, Druce and Swinhoe follow Moore in treating this species as distinct from *epius*, but Bingham treats it as a closer relation under the title of "race."

Genus, TARAKA, de Nicéville.

295. *Taraka hamada*, Druce.

Miletus hamada, Druce, Cist. Ent. Vol. I. p. 361 (1875).

Mt. Kina Balu (Waterstradt).

Distribution: Sikkim to Malay Peninsula and Archipelago; China and Japan.

Doherty, quoted in *Butterflies of India* Vol. III, p. 57, says: "So far as I know, the species of this genus occur in the low-country; they are found in forest, and are very weak and moth-like in flight." In view of this it would be of interest to know at what altitude Waterstradt took this species on Kina Balu.

Genus, LYCAENOPSIS.¹ Felder.

Sub-genus, *Notarthurinus*, Chapman.

296. *Lycaenopsis (Notarthurinus) musina*, Snell.

Cyaniris musina, Snellen, Tijds. v. Ent. XXXV. p. 145
 (1892).

Mt. Kina Balu (Waterstradt); Sarawak: Paku, Mt. Matang, Mt. Santubong—2,600 ft. (Sar. Mus.).

Outside Borneo it has been recorded from Sumatra and Java.

The Indian examples recorded under this name by de Nicéville and Bingham have been recently described by Swinhoe (*Lep. Ind.* Vol. VII. p. 205, pl. 619, figs. 3, a, b. 1910) under the name *musinoides*. Chapman places this species provisionally in the genus *Notarthurinus*, and says of it "..... *musina* would be an ancestral form, hardly yet a *Lycaenopsis*."

Very common on the summit of Mt. Matang on some days.

296a. *Lycaenopsis (Notarthurinus) musina lugra*, H. H. Druce.

Cyaniris lugra, H. H. Druce, Proc. Zool. Soc. Lond. p. 573, pl. XXXII. fig. 5, ♂ (1895).

Mt. Kina Balu (Waterstradt).

Chapman regards it as "a geographical race of *musina*."

1. Dr. T. A. Chapman has shown how the name *Lycaenopsis*, Feld. has priority over the long-used name, *Cyaniris*, Dalm. I have therefore used it here and also followed Dr. Chapman's valuable paper (*Proc. Zool. Soc. Lond.* 1909, pp. 419-476) for the classification of this genus.

Sub-genus, *Neopithecops*, Distant.297. *Lycaenopsis (Neopithecops) zalmora*, Butl.

Pithecops zalmora, Butler, Cat. Fabr. Lep. B. M. p. 161 (1869).

Pithecops hylax, Moore (*nec* Fabr.), Proc. Zool. Soc. Lond. p. 587 (1877).

Pithecops dharma, Moore, Lep. Ceyl. Vol. I. p. 72, pl. XXXIV. fig. 4, ♂ (1881).

Parapithecops gaura, Moore, Journ. As. Soc. Beng. p. 20 (1884).

Neopithecops horsfieldi, Distant, Rhop. Malay. p. 210, pl. 22, fig. 15, ♂ (1884).

Labuan (Low); Limbang, Banting, Samarahan, Kuching, Mt. Matang—3,200 ft., Mt. Penrissen¹ (Sar. Mus.); South-East Borneo (Doherty).

Distribution: India, Ceylon, Andamans, Burma, Singapore, Sumatra, Sumbawa.

Bingham says: "this form is subject to much seasonal variation. The type in the British Museum is a specimen intermediate between the wet and the dry season broods, in which the disc of the fore-wing on the upperside is much paler, with a small spot of white in the middle."

In Borneo the seasons are not very definitely marked: though the "landas" or "wet season" sets in about October and usually lasts until February or March. An examination of 12 specimens in the Sarawak Museum shows that the seasonal differences cannot be relied on much; thus a typical wet-season form was taken in July and another in June and a third in May; of the remainder, two taken in April and May have the white on the fore-wing of the dry-season but the hind-wing is typically wet-season; only two taken in June and August are typical of the dry-season, and the other five taken in January, April and October, are typical of the wet-season. Mr. Shelford suggests in explanation, "that the colouring of the butterflies exhibiting seasonal changes is determined by the state of the weather during the early stages of the life-history, so that a wet August (for example) would produce the wet-season form, a dry August the dry-season form."²

1. Mr. Shelford gives an interesting account of the butterflies of this mountain in Journal No. 35. *Str. Br. Roy. Asiat. Soc.* 1901, pp. 29-42. He notices the distinctive character of the fauna of Penrissen as shewn by his collections there, and at the same time comments on the unexpected scarcity of butterflies as compared with those found on the mountains near Kuching,—Mts. Matang and Santubong. His small total of 9 species of Lycaenidae captured in one month's collecting is certainly illustrative of this; and my own experience there on a short trip in November 1909 was the same. (Mr. Shelford made his expedition there in May 1899.)

2. *l. c.* p. 33.

Chapman writes of this sub-genus and the next: “. they appear to me to be undoubted *Lycaenopsids*.” Dr. Chapman has not yet had an opportunity of examining the next species, *Neopithecops oskewa*, mihi, and I refer it to this sub-genus with some hesitation.

298. *Lycaenopsis (Neopithecops) oskewa*, n. sp.

MALE. *Upperside*. Dark fuscous brown; a small pale iridescent-blue discal patch in the fore-wing. *Underside*. Greyish-white. *Fore-wing*: a transverse thin brown line marks the end of cell; a post-discal line composed of six internervular brown striae; of which the first is situated further from the hind-margin than the others; the next two join; the fourth points downwards and outwards, the fifth and sixth very nearly join. Exterior to this row is a sub-marginal border of internervular lunules outwardly bordered by a row of darker spots; a thin dark line along the outer edge of hind-margin. Cilia of ground-colour. *Hind-wing*: a small dark sub-costal spot at base, followed by another much larger sub-costal spot towards the apical angle; immediately below this, a small brown spot; a thin transverse line at end of cell as in fore-wing; an irregular post-discal line of small brown spots; the first two of which are between the discocelluars; of the next three: one below each of the three median nervules and the last on the inner margin. The second median-nervular spot is placed nearer the base. Sub-marginal border and cilia as in fore-wing.

FEMALE. Only differs from the male in having a larger and better defined discal patch of iridescent blue-white in the fore-wing.

Exp. al. ♂, 22-24 mm.; ♀, 25 mm.

Types, ♂ and ♀, Kuching, Sarawak (Sar. Mus.).

Sarawak: Marapok Mts. and Kuching (Sar. Mus.).

Mr. H. H. Druce kindly examined this species and reported that it was not in the British Museum or known to him.

Sub-genus, *Megisba*, Moore.

299. *Lycaenopsis (Megisba) malaya*, Horsf.

Lycaena malaya, Horsfield, Cat. Lep. Mus. E. I. C. p. 70 (1828).

Megisba thwaitesi, Moore, Lep. Ceyl. Vol. I. p. 71, pl. XXXIV. figs. 3, 3a, 3b (1881).

Megisba sikkima, Moore, Journ. Asiat. Soc. Beng. p. 21 (1884).

Pathalia albidisca, Moore, *t. c.* p. 21 (1884).

Megisba gunga, Swinhoe, Proc. Zool. Soc. Lond. p. 133, pl. XIX. fig. 7 (1885).

Sandakan (Pryer); Trusan, Limbang, Buntal, Mt. Matang—2000 ft. and Bau (Sar. Mus.).

Distribution: India and Malaya.

De Nicéville states that it is the tailed form which occurs in Sumatra and Borneo; and the four examples in the Sarawak Museum bear this out. Of these seven specimens, three taken in April and May have the white oblique patch in the fore-wing indicative of the dry-season, three taken in April, June and July are typically wet-season, while the seventh captured in November has it more intermediate in character. In none of them is the white extended to the hind-wing.

Sub-genus, *Lycaenopsis*, Chapman.

300. *Lycaenopsis (Lycaenopsis) shelfordi*, de Nicév.

Cyaniris shelfordi, de Nicéville, Journ. Bomb. Nat. Hist. Soc. XIV. p. 245, pl. F F. fig. 7, ♂ (1902).

Sarawak: Mt. Matang—3,200 ft. (Sar. Mus.).

This species is fairly common on the top of Mt. Matang, and it occurs at the foot of the mountain: taken all the year round. The top of Matang is a small plateau some 50 ft. square, devoid of any trees, but mostly covered with low-growing shrubs, over which *shelfordi* flies slowly in the sun. It is on the wing from 11 to 2 p.m. and probably longer if the sun is not concealed by mist or thick clouds; on some days it is to be met with in abundance.

301. *Lycaenopsis (Lycaenopsis) haraldus*, Fab.

Papilio haraldus, Fabricius, Mant. Ins. Vol. II. p. 82 (1787).

Lycaenopsis ananga, Felder, Reise, Nov. Lep. Vol. II. p. 257, n. 303, pl. XXXII. figs. 10, 11 (1865).

Cupido cornuta, Druce, Proc. Zool. Soc. Lond. p. 349, pl. XXXII. fig. 5, ♀ (1873).

Labuan (Low and Wahnes); Banting, Kuching, Mt. Matang, Santubong (Sar. Mus.).

Distribution: Malacca, Sumatra and Java.

Distant remarks that "the female appears to be at least difficult of capture, as it is rare in collections." And Druce says, "apparently a scarce insect in Borneo,¹ as I have seen three female specimens only—two, including the type of *C. cornuta*, which does not differ in anything from females from Malacca and Java, in Messrs. Godman and Salvin's collection, and one sent by Dr. Staudinger." Up to the end of 1909 there were but 5 (all males) in the Sarawak Museum; but the year 1909 seems to have been more favourable for them, as no

1. De Nicéville and Martin also remark on its rarity in their "Butterflies of Sumatra."

less than eleven specimens (six of which were females) were added during that year and several more have been taken since, mostly from well-collected over localities round Kuching; it seems to frequent old jungle only, and the female, flying low and slowly, is easy to capture. Taken all the year round. Variable in size but not in markings.

302. *Lycaenopsis (Lycaenopsis) ripte*, H. H. Druce.

Cyaniris ripte, H. H. Druce, Proc. Zool. Soc. Lond. p. 574, pl. XXXII. fig. 11, ♂ (1895).

North Borneo and Ulu Madihit (Sar. Mus.); Labuan (Low).
"I believe this is the only *Cyaniris* with a spot in the cell of fore-wing below" (Druce).

303. *Lycaenopsis armenta*, Fruhst.

Cyaniris armenta, Fruhstorfer, Stett. entomol. Zeit. p. 287 (1910).

North Borneo, Lawas, South-East Borneo (coll. Fruhstorfer).

304. *Lycaenopsis (Lycaenopsis) puspa*, Horsf.

Polyommatus puspa, Horsfield, Cat. Lep. E. I. C. p. 67 (1828).

Polyommatus larcularis, Moore, Ann. Mag. Nat. Hist. ser. 4, xxi. p. 341 (1877).

Sandakan (Pryer); Labuan (Low); Lawas, Marapok Mts., Limbang, Banting, Padang, Quop, Santubong, Kuching (Sar. Mus.).

Distribution: India and Malaya, including Ceylon, Andaman Isles, and the Philippines.

A large series in the Sarawak Museum does not show any seasonal differences, though the specimens have been taken in most months of the year. The only point of variety is the lower sub-costal spot on the underside of the hind-wing, which in many specimens is well-developed, agreeing with Bingham's figure of the species in *Fauna Brit. India*, but in others it is much reduced and in two it is absent altogether.

There is a curious female (the only ♀ in the series) which has been identified as *C. puspa* on account of the correct markings and colour of the underside; the upper side of which is black, except for a slight discal patch of iridescent blue in the fore-wing, rather like the female *L. transpectus*, Moore, figured by Swinhoe (*Lepidopt. Ind.* Vol. VII. pl. 620, fig. 1a, 1910).

- 304a. *Lycaenopsis (Lycaenopsis) puspa lambi*, Dist.

Polyommatus lambi, Distant, Ann. Mag. Nat. Hist. ser. 5, x. p. 245 (1882).

Sandakan (Pryer).

Distribution: Malay Peninsula, Nias Island and Sumatra.

Druce, de Nicéville and Swinhoe regard *limbi* as a synonym of *puspa*, but Chapman gives this name subspecific distinction.

305. *Lycaenopsis (Lycaenopsis) limbata placida*, de Nicév.

Cyaniris placida, de Nicév., Journ. Asiat. Soc. Beng. Vol. LII. Pt. 2 p. 68, n. 3, pl. I. fig. 8, ♂ (1883).

Sarawak: near Batu Lawi, Limbang, Mt. Saribu, Mt. Matang, Mt. Penrissen, Mt. Santubong, Mt. Lingga and Kuching (Sar. Mus.). First record for Borneo.

Distribution: Sikkim, Assam, Khasi Hills, Tenasserim, Penang and Sumatra.

Two females in the Sarawak Museum are considerably darker on the upperside than in the description given by Bingham though he admits (*l.c.*) that he is in doubt as to his female specimens. In the Sarawak examples the general colour is a dull fuscous black, relieved discally in the fore-wing by an oblong patch of blueish-white slightly iridescent; the hind-wing similar, though the patch is much reduced. In the fore-wing there is a small black spot at the end of cell.

306. *Lycaenopsis (Lycaenopsis) strophis*, H. H. Druce.

Cyaniris strophis, H. H. Druce, Proc. Zool. Soc. Lond. p. 573, pl. XXXII. fig. 4, ♂ (1895).

Mt. Kina Balu (Waterstradt); Mt. Penrissen (Sar. Mus.).

Druce (*l.c.*) asks, "Can this be a seasonal form of *C. dilectissima*? On the underside they are almost identical, but on the upperside the hind-wings are strikingly different."

Chapman on the other hand suggests that it may turn out to be a form of *limbata*; while a third suggestion comes from Fruhstorfer who places it provisionally as a sub-species of *singalensis*, Felder.

307. *Lycaenopsis (Lycaenopsis) dilecta*, Moore.

Polyommatus dilectus, Moore, Proc. Zool. Soc. Lond. p. 139 (1879).

Sarawak: near Batu Lawi and Mt. Matang—3,200 ft. (Sar. Mus.).

This is the first record for Borneo. The males were very common along the mountain streams between Madihit and Batu Lawi.

Distribution: Himalayas; Simla to Sikkim; Assam; Upper Burma; Arracau.

The only difference between the Sarawak examples and the described form is that the paleness in the centre of the disc of the fore-wing and upper discal area of the hind-wing is barely perceptible in the Sarawak specimens; though as this

characteristic varies with the seasonal forms, this slight difference does not separate them from that species.

308. *Lycaenopsis (Lycaenopsis) camenae*, de Nicév.

Cyaniris camenae, de Nicéville, Journ. Bomb. Nat. Hist. Soc. Vol. IX. p. 278, pl. O. fig. 22, ♂ (1895).

Cyaniris selma, H. H. Druce, Proc. Zool. Soc. Lond. p. 573, pl. XXXII. fig. 10, ♂ (1895).

Mt. Kina Balu (Waterstradt); Kuching, Paku, Mt. Penrissen—3,500 ft. (Sar. Mus.).

Also occurs in Sumatra, where it is "the commonest species of the genus" (de Nicéville and Martin).

Fruhstorfer suggests that *selma* may be a sub-species of *coelestina*, Kollar.

309. *Lycaenopsis (Lycaenopsis) dilectissima*, H. H. Druce.

Cyaniris dilectissima, H. H. Druce, Proc. Zool. Soc. Lond. p. 571, pl. XXXII. figs. 2, 3 (1895).

Mt. Kina Balu (Everett and Waterstradt).

Fruhstorfer regards this species as a sub-species of *ceyx*, but Chapman finds the male ancillary appendages different.

310. *Lycaenopsis (Lycaenopsis) plauta*, H. H. Druce.

Cyaniris plauta, H. H. Druce, Proc. Zool. Soc. Lond. p. 574, pl. XXXII. figs. 8, 9, ♂ and ♀ (1895).

Mt. Kina Balu (Waterstradt and Everett); Labuan (Low); Limbang, Mt. Saribu, Mt. Penrissen, Paku (Sar. Mus.).

Only found in Borneo.

There are some variations in the males of this species. First, the dark marginal band of the hind-wing can become quite broad as in Sarawak examples or reduced to a marginal row of dark spots as in Druce's figure. Again, the white on the upper surface of the hind-wing varies a good deal; Druce comments on one from Mt. Kina Balu (3,000 ft.) in which this white patch on the apex of the hind-wing has almost disappeared. In the Sarawak Museum specimens it is much reduced. All the Sarawak examples have a small dark spot over the cell on the underside of the hind-wing, which is not figured by Druce though he writes that the black spots are arranged much as in *placida*, which has this spot.

311. *Lycaenopsis (Lycaenopsis) sonchus*, H. H. Druce.

Cyaniris sonchus, H. H. Druce, *op. cit.* p. 655, pl. XXIX. fig. 4, ♂ (1896).

Kuching, ♀ (Sar. Mus.); S. E. Borneo (Wahnes).

Chapman suspects that this species is but a form of *plauta*, having found the male appendages to be identical. He suggests however, that possibly he may not have had true *sonchus* to examine.

Druce describes the species from a male only, but the single female in the Sarawak Museum differs so much from the female *plauta* that a brief description should be of interest; and for this reason I prefer to keep the two species distinct until further evidence to the contrary is forthcoming.

Upperside. Ground-colour of dark fuscous-brown: with large white discal patches, which are lightly covered with pale-blue iridescent scales. *Fore-wing:* sharply defined discal patch begins at base of first median nervule, extends upwards into outer end of cell, continuing outwards to meet third median nervule 4 mm. from hind-margin, leaving a marginal border of ground colour, which diffuses slightly at inner margin. *Hind-wing:* costal margin of ground-colour reaching sub-costal nervure and extending along first sub-costal nervule towards apex; a broad hind-marginal band of ground-colour from a little below apex across to inner margin, occupying nearly a half of the wing. Hind-marginal border of inter-nervular dark fuscous round spots inwardly edged with a few light scales; remaining portion of the wing occupied by white discal patch. Cilia whitish.

Underside: as in male except for the presence in the hind-wing of a small brown spot immediately below the outer large sub-costal spot; this is absent in Druce's figure of the male.

Exp. al. 31 mm.

312. *Lycaenopsis (Lycaenopsis) melaena*, Doherty.

Cyaniris melaena, Doherty, Journ. Asiat. Soc. Beng. p. 434, pl. XXIII. fig. 13, ♂ (1889).

Sarawak: Kuching (Sar. Mus.).

Distribution: Southern Tenasserim, Malacca and Sumatra.

313. *Lycaenopsis (Lycaenopsis) tenella placidula*, H. H. Druce.

Cyaniris placidula, H. H. Druce, Proc. Zool. Soc. Lond. p. 572, pl. XXXII. figs. 6, 7, ♂ and ♀ (1895).

Mt. Kina Balu (Waterstradt); Mt. Marapok (Ind. Mus.); Kuching and Mt. Penrissen—3,500 ft. (Sar. Mus.).

Druce remarks that it is closely allied to *C. placida*; de Nicéville and Fruhstorfer treats it as a sub-species of *placida*; but Chapman having examined the ancillary appendages regards it as a local race of *tenella*, Miskin.

Druce further observes: "Apparently plentiful where it occurs. There seems to be practically no variation, judging from the specimens I have examined."

There are only three examples in the Sarawak Museum, two from Mt. Penrissen after three weeks' arduous collecting in May 1900 by Messrs. Shelford and Cox together with four or five native collectors and a third taken near Kuching in August 1911; so that apparently it is *not* very plentiful in the Sarawak localities.

314. *Lycaenopsis lingga*, sp. n. (Fig. 5, ♀).

FEMALE. *Upperside*. Dark fuscous with white discal patches. *Fore-wing*: the white discal patch is larger than in female *haraldus*; reaches the inner margin leaving an even border of fuscous—some 2 mm. wide—from base along costa, widening at apex and continuing evenly along hind-margin. *Hind-wing*: the white discal patch continues widely from costa, narrowing at inner margin, leaving small basal patch of fuscous and a broad hind-marginal border, widest at anal angle and narrowing towards apex. *Underside*. Creamy-white. *Fore-wing*: a small indistinct dark spot just below the sub-costal nervure, half-way between apex of cell and apex of wing; two small elongate dark spots below first and second median nervules; the usual outer border composed of fuscous lunular line, subterminal line of transverse spots and thin dark anteciliary line. *Hind-wing*: dark sub-basal spot immediately below costal nervure, a smaller one below it in cell, just above junction of first median nervule and median nervure. A larger dark spot on costa near apex, with very small spot immediately below: this post-discal series is continued by four spots shifted further outwards, but inclining inwards and growing larger towards the fourth (*i.e.*, sixth of the post-discal series). Hind-marginal border as in fore-wing. Cilia fuscous. Antennae black-brown ringed with white. Head, thorax and abdomen black-brown above, creamy-white below.

Exp. al. 25 mm.

Type. Female (and only known specimen), Mt. Lingga, Sarawak (Sar. Mus.).

Dr. Chapman kindly examined this and the next species for me.

315. *Lycaenopsis nigerrimus*, sp. n.

MALE.¹ *Upperside*. Uniform dark fuscous. Cilia whitish. *Underside*. Whitish. *Fore-wing*: costal margin slightly tinged with fuscous, a short slender dark line closing cell; a post-discal regular transverse series of six short fuscous inter-nervular lines, the first slightly shifted (and well sloped) inwards, the third sloping outwards, the fourth shifted outwards, followed by typical fuscous lunular line and sub-terminal series of spots. *Hind-wing*: a short slender fuscous line closing cell; a very dark-brown sub-costal spot—the first of a post-discal series of eight (the remaining seven of which are smaller and lighter brown); the second is pale and immediately below the first; the third and fourth shifted outwards, the fifth slightly inwards, the sixth and eighth more so; the seventh

1. This specimen was entered as a male in the Museum catalogue by Mr. Shelford. Unfortunately the body has since been lost, so verification is now impossible.

larger and elongate, shifted outwards; lunular line and sub-terminal series of spots as in fore-wing, but spots more distinctly defined.

Exp. al. 29 mm.

Type. Male (and only known example) Kuching, Sarawak (Sar. Mus.).

L. nigerrimus and *L. haraldus* are I believe the only Bornean Lycaenopsids which are without sub-basal spots on the underside of hind-wing, and *nigerrimus* suggests a connecting link between *haraldus* and other Bornean species of *Lycaenopsis*, which have one general type of underside markings.

316. *Lycaenopsis moultoni*, Chapman.

Lycaenopsis moultoni, Chapman, Trans. Ent. Soc. Lond. p. 184, pl. XXVIII. figs. 5, 6, 7 (1911).

Sarawak: Kuching and Mt. Santubong—2,600 ft. (Sar. Mus.).

Type ♂ from Sarawak in British Museum; co-type in Sarawak Museum.

There is a single specimen in the Sarawak Museum very like the male of this species which I take to be its female. It differs in the following points:

- (i) the hind-marginal border on the upperside of fore-wing is continued evenly to costa, not broadened at apex as in male;
- (ii) the hind-marginal border of the hind-wing is broader than in the male;
- (iii) on the underside of hind-wing the last spot of the post-discal row is shifted further up the inner margin than in the male, so as to form a third spot to the basal row, rather than the last spot of the post-discal row;
- (iv) the spot in cell is rather more pronounced;
- (v) the colouring is the same, but the forewings are more rounded, not so pointed as in the male.

Exp. al. ♀ 20 mm.; ♂ 20-27 mm.

The male was taken fairly commonly near Kuching in March 1911.

317. *Lycaenopsis matanga*, Chapman.

Lycaenopsis matanga, Chapman, Trans. Ent. Soc. Lond. p. 185, pl. XXVIII. figs. 1-4 (1910).

Sarawak: Kuching—taken in January, February, April, July and November (Sar. Mus.).

Type, ♂, (from Sarawak) in British Museum; co-type in Sarawak Museum.

Six examples before me agree exactly in colour and markings with the co-type, in which the fore-wing area of blue is rather violet, that of the type being greenish.

318. *Lycaenopsis delapra*, sp. n.

MALE. *Upperside*. Dark fuscous with discal region light green-blue. *Fore-wing*: the blue discal patch reaches from inner margin upwards to median nervure, and beyond third median nervule (but not in cell) to sub-costal nervure where it merges into the fuscous border, thus leaving a broad, even—except for abrupt interruption at end of cell—fuscous border from base through cell along costa and hind-margin. *Hind-wing*: broader fuscous margin from base along costa and hind-margin, slightly narrower along the inner margin enclosing a small discal patch of light green-blue scales. *Underside*. Grey-white. *Fore-wing*: costal, apical and upper hind-marginal region grey, remainder lighter. A slender fuscous line closing cell, a regular post-discal series of five internervular fuscous spots, the upper three very small (in another example these are obsolescent); no spot below the first median nervule; an outer border composed of lunular line, subterminal line of transverse spots and thin dark anteciliary line. *Hind-wing*: grey-white. Two very dark sub-basal spots, one below costal nervure and the other in cell; a slender line closing cell; a post-discal series of 8 spots, the first of which is large and dark and immediately below the costa, the second smaller and lighter—below it, the third small and shifted outwards together with the fourth and fifth, the sixth larger and shifted in, the seventh shifted out and the eighth well in on the inner margin: an outer border of continuous lunular line followed by subterminal line of dark transverse spots and thin ante-ciliary line. Cilia fuscous. Antennae black, ringed with white. Head, thorax and abdomen above black-fuscous, below whitish.

Exp. al. 29 mm.

Type. Male. Matang Road, near Kuching, Sarawak (Sar. Mus.).

A second example (the only other known)¹ from Mt. Matang, Sarawak. This last measures 35 mm. across the wings.

Fore-wings pointed as in *L. matanga*, Chapman. The curious light green-blue of the upperside and the sharp interruption of fuscous border at the end of cell, give this species an appearance very distinct from any other Bornean or Indian *Lycaenopsid*.

1. I am inclined to think that Dr. Chapman has described & figured two distinct species under the name *matanga*, although he notices no differences in the appendages. His description of a specimen with greenish-blue in fore-wing, extending beyond the cell, & of diminished markings on the underside of fore-wing, agrees well with my *delapra*, as does his fig. 1, which however is in no way like the co-type returned to me by Dr. Chapman. The six *matanga*, while agreeing well with one another, differ consistently on both upper & underside from the two *delapra*. I suggest that on comparison of all the specimens, my *delapra* will prove to be the same as the type of *matanga*, Chapman (now in the British Museum) and that the co-type of *matanga*, Chapman, will have to be regarded as a separate species under a new name.

Genus, ZIZERA, Moore.

319. *Zizera otis*, Fab.¹*Papilio otis*, Fabricius, Mant. Ins. Vol. II. p. 73 (1787).*Polyommatus sangra*, Moore, Proc. Zool. Soc. p. 772, pl. 41, fig. 8, ♂ (1865).*Lycaena lysizone*, Snellen, Tijd. voor Ent. XIX. p. 152, n. 491, pl. VII. figs. 2, 2a (1876).

Sandakan (Pryer); Labuan (Wahnes and Waterstradt); Mt. Marapok (Ind. Mus.); Sarawak (Sar. Mus.).

Distribution: India; Ceylon; Burma and Assam to Java; China.

One of the commonest "blues" in Sarawak; being found flying a few inches above any cut lawns in great profusion.

"Abundant, in full blaze of sunshine." (Distant and Pryer, *Ann. Mag. Nat. Hist.* ser. v. 112, p. 267, 1887).

Genus, NIPHANDA, Moore.

320. *Niphanda reter*, H. H. Druce.*Niphanda reter*, H. H. Druce, Proc. Zool. Soc. Lond. p. 576, pl. XXXII. fig. 12, ♂ (1895).

Mt. Kina Balu (Waterstradt).

This is the only member of the genus *Niphanda*, described from the Malay Archipelago. Druce says it is nearly allied to a Sikkim species—*N. cymbia*; de Nicéy.

Genus, LYCAENESTHES, Moore.

321. *Lycaenesthes emolus*, Godt.*Polyommatus emolus*, Godart, Encycl. Meth. IX. p. 656 (1823).*Lycaenesthes bengalensis*, Moore, Proc. Zool. Soc. Lond. p. 773, pl. XLI. fig. 9, ♂ (1865).

Labuan (Low and Wahnes); Lawas, Trusan, Limbang, Quop, Tambak, Kuching, Lundu (Sar. Mus.); S. E. Borneo (Wahnes).

1. Since writing the above I have received Dr. Chapman's interesting paper "On *Zizeeria*, a group of Lycaenid Butterflies" published in the Transactions of the Entomological Society of London (1910, pp. 479-497). He points out that the name *otis*, Fab. has been used for two species viz: *indica*, Murray and *labradus*, Godt. with its vars. *sangra*, Moore, and *dryina*, Chapman. And of these species he proposes the generic (or sub-generic name of *Zizina*). Dr. Chapman points out "the Fabrician description also rather favours *sangra* than *indica*," and the Sarawak examples agree well in markings with the example of *labradus* var. *sangra* as figured by Dr. Chapman (*l. c.* Pl. LII. fig. 5), so I prefer to retain the older name *otis* until further evidence is brought forward for dropping it.

Distribution: India and Malaya to New Guinea and North Australia.

This species does not appear to be rare in western Sarawak, but it is scarcer further north.

322. *Lycaenesthes lycaenina*, Feld.

Lycaenesthes lycaenina, Felder, Verh. Zool.-bot. Ges. Wien. xviii. p. 281 (1868).

Lycaenesthes lycambes, Hewitson, Ill. Di. Lep. p. 220, pl. XC. figs. 11, 12, ♂ (1862-1878).

Lycaenesthes orissica, Moore, Journ. Asiat. Soc. Beng. p. 23 (1884).

Sandakan (Pryer); Kuching, Tambak, Mt. Matang—3,200 ft., Quop (Sar. Mus.); S. E. Borneo (Wahnes).

Distribution: India and Ceylon to Malay Peninsula.

Genus, LUTHRODES, H. H. Druce.

323. *Luthrodes mindora*, Felder.

Lycaena mindora, Felder, Reise Nov. Lep. II. p. 277, t. 34, figs. 9, 10 (1865).

Cupido aruana, Druce (*nec* Felder), Proc. Zool. Soc. Lond. p. 349 (1873).

Sandakan (Pryer—Sar. Mus.); Labuan (Low).

Genus, EVERES, Hübner.

324. *Everes argiades*, Pallas.

Papilio argiades, Pallas, Reise, Vol. I. App. p. 472 (1771). (1771).

Hesperia parrhasius, Fabricius, Ent. Syst. Vol. III. p. 289 (1793).

Polyommatus lacturnus, Godt. Enc. Méth. IX. p. 66a (1823).

Lycaena dipora, Moore, Proc. Zool. Soc. Lond. p. 506, pl. XXXI. fig. 8, ♂ (1865).

Mt. Kina Balu (Waterstradt); Labuan (Low); Sarawak (Sar. Mus.).

Distribution: The Holarctic Region. India and Ceylon; Malaya to Australia.

Common all over Sarawak and taken all the year round.

The Sarawak Museum specimens show rather an extra development of the subternal ochraceous yellow patch on the underside of the hind-wing.

Genus, *NACADUBA*, Moore.325. *Nacaduba macrophthalma*, Feld.

Lycaena macrophthalma, Felder, Verh. Zool.-bot. Ges. Wien, XII. p. 483 (1862).

Sarawak: Kuching, Mt. Matang—3,200 ft. Taken in February, May and June (Sar. Mus.). Butler¹ records it from Borneo.

Distribution: India, into the Malay Sub-region as far as Australia. De Nicéville remarks that it has the greatest geographical range of all the species of the genus.

A very variable species; and apparently not common in Sarawak. The two males in the Sarawak Museum have additional blue scales at the anal angle to those on the two black anal spots. The female is normal in this respect.

326. *Nacaduba lugine*, Druce.

Cupido pactolus, Druce (*nec* Feld.) Proc. Zool. Soc. Lond. p. 348 (1873).

Nacaduba lugine, H. H. Druce, Proc. Zool. Soc. Lond. p. 577 (1895).

Labuan (Low); Madihit, Kuching and Quop (Sar. Mus.). The female apparently is undescribed.

The four Sarawak specimens were taken in April, May and November.

The single female in the Sarawak Museum has been referred to this species on account of the underside markings, which agree well with those of the male, the only difference being the addition of a small orange spot on the 3rd median nervule of the hind-wing, not quite touching the large black-spotted orange anal patch. The upperside fore-wing is dull violet narrowly margined with fuscous along the costa and broadly along the hind-margin, spreading across the apex; a broad fuscous costal margin in hind-wing, broadening gradually towards apex; a narrow hind-marginal fuscous border intensified by a row of dark internervular spots, inwardly light-edged and outwardly bordered by a white anteciliary line. Base and discal region to inner margin dull violet as in fore-wing. Cilia and tail dark fuscous, the latter white-tipped.

Exp. al. 31 mm.

Type, ♀, upper waters of the Madihit River, alt. 2000 ft., Limbang district, Sarawak.

327. *Nacaduba angusta*, Druce (Fig. 8, ♀).

Cupido angusta, Druce, *op. cit.* p. 349, pl. XXXII. fig. 9, ♂ (1873).

1. *Trans. Linn. Soc. Lond.*, zool. 2nd. ser. vol. I. p. 566 (1877).

Nacaduba kerriana, Distant, Ann. Mag. Nat. Hist. ser. 5. XVII. p. 293 (1886); id. Rhop. Malay. p. 455, pl. 42, fig. 12, ♂ (1886).

Labuan (Low); Kuching and Santubong (Sar. Mus.).

Distribution: Tenasserim, Burma, Malay Peninsula and Sumatra.

From an examination of five specimens in the Sarawak Museum I have no hesitation in making *N. kerriana*, Distant, synonymous with this species. Druce¹ suggested this course, but could not be certain without examining a specimen. In discussing *kerriana* he says (*l.c.*) "the underside of the figure given in Rhop. Malay. appears to agree well with that of *N. angusta* but the upperside has a broader black outer margin." The Sarawak specimens have a very slightly narrower black margin than in Distant's figure, and the fuscous spots along the hind-wing are almost obsolete on the upperside. As these upperside marginal fuscous bands and markings are always slightly variable throughout this sub-family of Lycaenidae this small difference may be disregarded. The important markings on the underside agree remarkably well with both descriptions of *kerriana* by Distant and Bingham,² and with Druce's description of *angusta*. Bingham (*l.c.*) remarks that the female is unknown, so I append a description of the single female in the Sarawak Museum.

FEMALE. *Upperside.* Fuscous: discal portion lighter and relieved by bright iridescent blue. *Fore-wing:* fuscous ground-colour forming broad margin round a discal whitish patch. The upper boundary of this patch starts from base through middle of cell to a point a little short of half-way between end of cell and hind-margin, descends thence to the 2nd-median nervule whence it continues towards the inner margin about 1 millimetre nearer the base. The patch is dull at the base, but gradually becomes lighter towards the hind-margin. In the lightest part, above and below the third median nervule, are two fuscous spots, and slightly nearer the base, above and below the 2nd median nervule, is a similar pair of slightly larger spots. The whole discal patch is iridescent with brilliant light blue scales. *Hind-wing:* a lighter fuscous than in fore-wing; the markings from underside show through and give a slightly mottled appearance. From base along median nervule a few iridescent light blue scales. A hind-marginal border of brown spots between the nervules as mentioned in Distant's description of the male. *Underside.* Similar to that of male, except that the markings are perhaps rather more emphasized.

1. *Proc. Zool. Soc. Lond.* p. 578 (1895).

2. *Fauna Brit. Ind. Butterflies*, Vol. II. p. 384 (1907).

Exp. al. 31 mm.

Type, ♀, Kuching, Sarawak (Sar. Mus.).

328. *Nacaduba pavana*, Horsf.

Lycaena pavana, Horsfield, Cat. Lep. Mus. E. I. C. p. 77 (1828).

Sandakan (Pryer); Kina Balu (Waterstradt); Labuan (Low); Limbang, Malinau, Banting, Kuching, Mt. Santubong, Simatan, Mt. Matang and Mt. Penrissen (Sar. Mus.); South Borneo (Ind. Mus.).

Distribution: Sikkim, Assam, Burma, Sumatra and Java.

In Sarawak it seems to be essentially a mountain species, for out of 16 species in the Sarawak Museum, 11 are from an altitude of 2,600 ft. to 3,500 ft.

The females vary in the amount of iridescent blue in the hind-wing. In some there is hardly any, while in one from Simatan the whole of the discal portion in both wings is blue.

329. *Nacaduba bhutea*, de Nicév.

Nacaduba bhutea, de Nicéville, Journ. As. Soc. Beng. p. 72, pl. I. fig. 13, ♂ (1883).

Mt. Kina Balu (Waterstradt and Everett); Labuan (Low); Limbang (Sar. Mus.).

Outside Borneo it occurs in Sikkim.

I here follow Mr. Druce in accepting this and the next two species as three distinct species although Butler has thrown doubt upon the validity of *N. bhutea*, and de Nicéville upon *N. alata*. A comparison of the male ancillary appendages as studied by Dr. T. A. Chapman in the genus *Lycaenopsis* (*Cyaniris*) would be of great value and interest.

330. *Nacaduba ardates*, Moore.

Lycaena ardates, Moore, Proc. Zool. Soc. Lond. p. 574, pl. LXVII. fig. I. (1874).

Lycaena noreia, Felder, Verh. Zool.-bot. Ges. p. 282 (1868).

Sandakan (Pryer); Labuan (Low); Limbang, Quop, Matang, Kuching, Santubong, Tambak, Mt. Penrissen, Pangkalen Ampat (Sar. Mus.).

Distribution: India, Ceylon, Andamans and Nicobars; Malaya and Philippines.

The tailed form is characteristic of Borneo; and it is fairly common in Sarawak all the year round. Staudinger records having received the tailless form from Labuan which was described by Felder as *N. noreia*. De Nicéville, who saw the type of this last species, pronounced it to be the tailless form of *N. ardates*. Bingham does not support this view.

331. *Nacaduba aluta*, Druce.

Cupido aluta, Druce, Proc. Zool. Soc. Lond. p. 349, pl. XXXII. fig. 8 (1873).

Sandakan (Pryer); Labuan (Low and Wahnes); Quop, Santubong, Serai, Kuching, Bidi, (Sar. Mus.).

Outside Borneo it occurs in Malacca and the Philippines.

332. *Nacaduba atrata*, Horsf.

Lycaena atrata, Horsfield, Cat. Lep. Mus. E. I. C. p. 78 (1828).

Lycaena kurava, Moore, Cat. Lep. Mus. E. I. C. Vol. I. p. 22 (1857).

Cupido akaba, Druce, Proc. Zool. Soc. Lond. p. 350 (1873).

Lampides prominens, Moore, Ann. Mag. Nat. Hist. (4). XX. p. 341 (1877).

Kina Balu (Waterstradt); Mt. Marapok (Ind. Mus.); Labuan (Low); Limbang, Quop, Kuching, Matang, Santubong (Sar. Mus.); S. E. Borneo, near Banjarmasin (Wahnes).

Distribution: India and Ceylon to Malay Peninsula, Sumatra and Java.

Fairly common in Sarawak throughout the year.

333. *Nacaduba beroë*, Feld.

Lycaena beroë, Felder, Reise Nov. Lep. II. p. 275, pl. XXXIV. fig. 36 (1865).

Sandakan (Pryer); Limbang, Banting, Kuching, Mt. Matang and Mt. Santubong (Sar. Mus.).

Also from Malacca and Philippine Islands.

334. *Nacaduba hermus*, Feld.

Lycaena hermus, Felder, Sitz. Ak. Wiss. Wien. Math. nat. Cl. XL. p. 457, No. 33 (1860).

Lampides viola, Moore, Ann. Mag. Nat. Hist. ser. 4. XX. p. 340 (1877).

Lycaenesthes merquiana, Moore, Journ. Asiat. Soc. Beng. p. 23 (1884).

Mt. Kina Balu (Waterstradt); Trusan, Limbang, Tambak, Santubong, Quop, Kuching (Sar. Mus.); S. Borneo (Ind. Mus.).

Distribution: Sikkim, Southern India, Nilgiris, Ceylon, Assam, Burma, Tenasserim, Andamans, Sumatra, Celebes, Ceram and Key Islands.

The Sarawak specimens were taken in April, May, August and September.

335. *Nacaduba ancyra*, Feld.

Lycaena ancyra, Felder, Sitz. Ak. Wiss. Wien. Mat.-nat. Cl. XL. p. 458 (1860).

Cupido almora, Druce, Proc. Zool. Soc. Lond. p. 349, pl. XXXII. fig. 7 (1873).

Nacaduba pseustis, Doherty, Journ. Asiat. Soc. Beng. Vol. LX. Pt. II. p. 182 (1891).

Nacaduba aberrans, Elwes, Proc. Zool. Soc. Lond. p. 626, pl. XLIV. fig. 6, ♂ (1892).

Mt. Kina Balu (Waterstradt and Everett); Labuan (Low); North Borneo, Limbang, Baram, Lobang and Kuching (Sar. Mus.); S. E. Borneo (Doherty).

Distribution: Burma and the Philippines through Malaya to New Guinea.

Genus, *UNA*, de Nicéville.

336. *Una usta*, Dist.

Zizera? usta, Distant, Ann. Mag. Nat. Hist. ser. 5, Vol. XVII. p. 531 (1886).

One specimen recorded from Mt. Kina Balu (Waterstradt); Padang, Malinau, Limbang and Madihit (Sar. Mus.); Kuching (Ind. Mus.).

Distribution: India, Malay Peninsula and Sumatra.

Very common on the banks of the upper-waters of the Limbang and Madihit rivers, where hundreds could have been taken when settled close together on certain wet patches of sand or rock in company with *Lycanopsis dilecta*.

Genus, *LAMPIDES*, Hübner.

337. *Lampides bochus*, Cram.

Papilio bochus, Cramer, Pap. Exot. IV. p. 210, pl. 391, figs. C. D (1782).

Mt. Kina Balu (Waterstradt); Labuan (Low); Limbang, Quop, Santubong, Kuching (Sar. Mus.).

Distribution: India and Ceylon to Malaya¹ and Australia.

Druce notices that all the Bornean males which he has examined have the blue area of the fore-wing much contracted. These are probably the most typical form as there is a separate race *nicobaricus*, de Nicéville, only found in the Nicobars,

1. Not recorded from Sumatra by de Nicéville and Martin in their list (1895).

which has the blue area of the fore-wing much extended. Thus the contraction of this blue area should not be looked upon as abnormal.

338. *Lampides elpis*, Godt.

Polyommatus elpis, Godart, Encycl. Méth. IX. p. 654 (1823).

Lycaena kinkurka, Felder, Verh. Zool.-bot. Ges. Wien. XII. p. 481 (1862).

Cupido alecto, Druce, Proc. Zool. Soc. Lond. p. 348 (1873).

Lampides pseudelpis, Butler, Trans. Linn. Soc. zool. (2) 88 i. p. 547, pl. 68, figs. 8, 9 (1879).

Sandakan (Pryer); Kudat; Mt. Kina Balu (Waterstradt); Labuan (Low); Lawas (Everett); Limbang, Banting, Samaharan, Santubong, Kuching (Sar. Mus.); Nanga Badon (Brussels Mus.).

Distribution: India and Malaya.

There are two very small females in the Sarawak Museum, measuring only 25 mm. across the wings.

339. *Lampides kondulana*, Feld.

Lycaena kondulana, Felder, Verh. Zool.-bot. Ges. Wien. XII. p. 484 (1862).

A single worn male in the Sarawak Museum which Mr. Druce thinks is probably this species.

Distribution: Burma, the Nicobars, Malay Peninsula, Java and Sumatra.

Bingham says this species is probably only a race of *L. elpis*, Godt.

340. *Lampides limes*, H. H. Druce.

Lampides limes, H. H. Druce, Proc. Zool. Soc. Lond. p. 581, pl. XXXII. fig. 16, ♂ (1895).

Mt. Kina Balu (Waterstradt).

Unknown to me.

341. *Lampides virgulatus*, H. H. Druce.

Lampides virgulatus, H. H. Druce, Proc. Zool. Soc. Lond. p. 581, pl. XXXII. fig. 17, ♂ (1895).

Kuching (Sar. Mus.); S. E. Borneo, near Banjarmasin (Wahnes).

Druce described and figured this species from a male (now in Mus. Staud.) the female being then unknown. The two examples in the Sarawak Museum are females and agree well

with Druce's description of the underside markings with the exception of this one small difference: in describing the white striae or bands, he says "the 4th extends to the 2nd median nervule, and has a small spot each side of it close to the costa." In the Sarawak specimens the exterior of these two spots is wanting. The colour bordering the black anal spot in the hind-wing is more of an orange-brown hue than the yellow tint in Druce's figure. The upperside much resembles ♀ *elpis*, except that the fuscous marginal band of the fore-wing is more pronounced towards the anal angle than in *elpis*.

Mr. Druce lately examined one of these for me and noted that it was "probably the unknown female of *virgulatus*," thus supporting my conjecture.

342. *Lampides coruscans*, Moore.

Lampides coruscans, Moore, Ann. Mag. Nat. Hist. (4) XX. p. 341 (1877).

Sarawak: North Borneo, Kuching, Paku, Mt. Matang—3,200 ft. and Quop (Sar. Mus).

Distribution: Ceylon.

This is the first record of this species for Borneo. The series in the Sarawak Museum agrees well with Col. Bingham's description in Fauna British India, except that he says the underside of the male is pale greyish-brown, whereas the Bornean males are dark greyish-brown, and in some cases as dark as the underside of *L. bochus*. The markings agree with the description. In the female the shape of the fuscous margin agrees well with Col. Bingham's description, though this fuscous margin is evidently less developed in the Bornean *coruscans*. Thus he says the outer margin of the blue area starts from the dorsum at three-fourths of its length from the base: but in the specimens before me, this blue area starts quite seven-eighths of the length of dorsum from the base. In the 10 females in the Sarawak Museum this fuscous border varies slightly in the amount of its development so that this discrepancy can hardly be worthy of specific distinction. Six out of eighteen come from the summit of Mt. Matang. These mountain forms have the striae rather less prominent.

343. *Lampides coerulea*, Druce.

Cupido coerulea, Druce, Proc. Zool. Soc. Lond. p. 349, pl. XXXII. fig. 6 (1873).

Lampides bochides, de Nicév. Journ. Bomb. Nat. Hist. Soc. p. 367, pl. F. fig. 15 (1891).

Lampides kankena, Distant, Rhop. Malay. p. 229, Tab. XX. fig. 18, ♂, 11, ♀ (1884).

Kina Balu (Waterstradt); Sandakan (Pryer); Labuan (Low); Sarawak: Mt. Matang and Mt. Santubong (Sar. Mus.); S. E. Borneo, near Banjarmasin (Wahnes).¹

Also occurs in Sumatra.

344. *Lampides abdul*, Distant.

Lampides abdul, Distant, Rhop. Malay. p. 456, pl. XLIV. fig. 22 (1886).

Lampides marakata, Doherty, Butt. Ind. Vol. III. p. 174, ♂ (1890).

Sandakan (Pryer).

Recorded from Malay Peninsula and Sumatra.

Mr. Druce kindly examined a female of *L. daones*, Druce, for me and he suggests that that species may eventually prove to be *L. abdul*, Dist.

345. *Lampides osias*, Röber.

Plebeius osias, Röber, Iris. i. p. 56, pl. V. fig. 17 (1886).

Lycaena amphyssina, Staud. Lep. Palawan, p. 100, pl. I. fig. 4, ♀ (1889).

Kudat; Labuan (Low); Sibutu (Everett); Banguay Island (Waterstradt).

1. In an article entitled "Habits of certain Bornean Butterflies" (*Ann. May. Nat. Hist.* Sept. 1889, pp. 209-218) Mr. S. B. J. Skertchly notes that the following genera among the Lycaenidae "alone supply true forest species, that never seek the sunny river-banks or bright glades and clearings:"—*Nacaduba*, *Lampides*, *Biduanda* and *Narathura* (*Arhopala*). While this statement is generally true, I should add that I have met species of *Lampides* and an *Amblypodia* in open places along river-banks, and by no means infrequently have taken species of *Lampides*, *Arhopala* and *Biduanda* along sunny paths in low secondary jungle and in sunlit clearings. Mr. Skertchly continues:—"The more plentiful butterflies in the forest are the blues and purples, which frequent the higher undergrowth and have a strong tendency to settle in the middle of leaves which turn their upper surface horizontally. The purples perhaps, such as *Narathura*, are more arboreal than the blues and fly higher, even up to 60 feet; but as a rule the forest butterflies keep pretty low down."

Mr. Skertchly points out that his experiences in North Borneo do not confirm the suggestion "that the rarity of butterflies in the deep forest shade is more apparent than real and that the mass of the individuals are high overhead on the tree-tops;" and he remarks on their scarcity on cleared mountain tops where he had occasion to spend periods of several days together. My experience is very much the opposite of this: the greatest variety of species and quantity of individuals are to be found just on such cleared mountain-tops; in fact my *modus operandi*, when after butterflies, is to go up the nearest mountain, at once have a space on the top cleared, and here one may be almost certain of catching some highly interesting species, which are either very rare or never met with at all in the jungle below. These are to be seen flying over and among tree-tops in the jungle below and great is the excitement when some bright-hued stranger comes hurrying up the mountain-side—to fly within reach of the net, or not?

The repeated mention of localities such as *Mount Matang*, *Mount Lingga*, *Mount Santubong*, etc. etc., throughout this paper will bear me out in this statement, as the majority of species recorded from those localities were taken in the way described.

Druce records it from Sumatra, and Snellen¹ from Billiton, the island between Borneo and Sumatra.

346. *Lampides celeno*, Cr.

Papilio celeno, Cramer, Pap. Exot. i. pl. 31, figs. C. D (1775).

Hesperia aelianus, Fabr. Ent. Syst. iii. p. 280 (1793).

Lampides agnata, Druce, Proc. Zool. Soc. Lond. p. 106, pl. XVI. figs. 2—4 (1874).

Sandakan (Ind. Mus.); Labuan (Low); Sarawak (Everett); Sarawak: Simanggang, Samarahan, Santubong, Quop, Kuching, Paku and Bau (Sar. Mus.); Ammutai, S. Borneo (Ind. Mus.).

The Sarawak Museum examples are all wet season forms and the underside markings vary a good deal. In one female out of four, the fuscous colouring of the hind-wing extends well into the disc, but in the other two the blue ground-colour predominates.

Very variable both in the ground-colour and in the markings.

Distribution: India and Malaya.

347. *Lampides optimus*, Röber.

Plebeius optimus, Röber, Iris. i. p. 56, pl. IV. fig. 16 (1886).

Kina Balu (Waterstradt); Sandakan (Pryer); Lawas (Everett); Labuan (Low); Tanganac Isle; Paku (Sar. Mus.).

348. *Lampides cleodus*, Feld.

Lycaena cleodus, Felder, Reise Novara, Lep. II. p. 272, pl. XXXIV. figs. 20, 21, 22 (1865).

Sandakan (Pryer); Mt. Marapok and Kuching (Ind. Mus.).

349. *Lampides zebra*, Druce.

Lampides zebra, H. H. Druce, Proc. Zool. Soc. Lond. p. 583, pl. XXXII. fig. 18, ♂ (1895).

Kina Balu (Waterstradt); Labuan (Low); Sarawak (Everett).

A long and variable series in the Sarawak Museum from the following localities:—Lawas, Limbang, Banting, Gadin, Kuching, Busau, Mt. Penrissen—3,400 ft., Quop and Bidi.

This species seems exceptionally close to *L. celeno* and I have found great difficulty in satisfactorily separating the two species in the collection of the Sarawak Museum. Druce himself, in describing the species, threw out the suggestion

1. *Notes from the Leyden Museum*. Vol. XIII. p. 189, 1891. "List of the Lepidopterous insects collected by Mr. A. G. Vordeman in the island of Billiton." By P. C. T. Snellen.

that it might eventually prove only a variety of *celeno*. Further research on this complex genus is much needed.

The following is a brief description of what I can only regard as a variety or form of *L. zebra*, though the differences are really greater than those noticed between some other "species (?)" of this difficult genus.

349a. var. *lawasa*, nov.

♂ *Upperside*: as in typical *L. zebra*, except that in the fore-wing there is a dark fuscous marginal border starting with a line at anal angle and broadening out to the apex, where it slightly diffuses on reaching costa; the inner end of this border is serrate. In the hind-wing there is a marginal row of black spots outwardly bordered with white between each nervule, that between the 2nd and 1st median nervule being the largest. This line of spots is succeeded exteriorly by a thin black line more pronounced than in *zebra*.

Underside: much as in *zebra*, but the third white mark from base is not so straight; and the 5th and 6th are closer together and more lunulate. In the hind-wing the first and second striae are very slightly more apart, the 4th is closer to the 3rd, and the 5th and 6th, as in fore-wing, are much more lunulate.

Described from three males in the Sarawak Museum, taken near Lawas, August and September, 1909.

350. *Lampides lividus*, H. H. Druce.

Lampides lividus, H. H. Druce, Proc. Zool. Soc. Lond. p. 584, pl. XXXII. fig. 20, ♂ (1895).

Mt. Kina Balu (Waterstradt); Labuan (Low); Sarawak: Mt. Matang—2000 ft. (Sar. Mus.).

This is a very distinct species characterized by "the much more elongate fore-wing, the costa being longer, the apex more produced, and the inner margin shorter." (Druce *l.c.*).

Druce in describing the species (1895) wrote that the type, which is in Messrs. Godman and Salvin's collection, was unique. However in 1896 he examined another male from Staudinger's collection, taken on Kina Balu by Waterstradt. It is pleasant therefore to record two examples, also males, from Sarawak.

351. *Lampides aratus*, Cr.

Papilio aratus, Cr. Pap. Exot. Vol. IV. pl. CCCLXV. figs. a, b (1782).

Mt. Kina Balu (Waterstradt); Sandakan (Pryer); Sarawak: Lawas, Limbang, Kuching, Buntal, Tambak, Santubong, Simatan.

Distribution: Malay Archipelago.

The fuscous marginal markings of the female vary in heaviness in Sarawak specimens. Common in Sarawak.

352. *Lampides adana*, Druce.

Cupido adana, Druce, Proc. Zool. Soc. Lond. p. 349 (1873).

Labuan (Low).

H. H. Druce considers this a very doubtful species and that it is probably a form of the preceding species (*L. aratus*, Cr.). Unknown to me.

353. *Lampides daones*, H. H. Druce.

Lampides daones, H. H. Druce, *op. cit.* p. 656, pl. XXIX. fig. 5, ♂ (1896).

Penengah (Cator); Sarawak: Kuching (Sar. Mus.).

354. *Lampides vyneri*, sp. n.

MALE. *Upperside*. Pale blueish-white with narrow fuscous hind-marginal border to fore-wing. *Fore-wing*: costa arched as in typical *Lampides* but apex much rounded. Fuscous hind-marginal border serrated on its inner side, and diminishing towards anal angle, disappears just below the end of 2nd sub-median nervule. A very thin dark line outwardly limits the hind-marginal border. Cilia light fuscous. *Hind-wing*: pale blueish-white as in fore-wing, but no hind-marginal border except very thin dark line from apex to anal angle ending at sub-median nervule.

Underside. Light brown fuscous marked with transverse white lines or striae. *Fore-wing*: six transverse white lines arranged as follows:—the first formed by a slender white fascia closing the cell, following below and slightly shifted inwards, a short outwardly oblique fascia from junction of 2nd median nervule to first median nervule, and immediately below this but slightly shifted inwards, another outwardly oblique fascia. The second line runs parallel and exterior to this composite line; the second fascia is longitudinally divided into two and is immediately exterior to the fascia cell, the third fascia rather thick, fourth and fifth continuous, sixth slightly shifted inwards and joining at end with first and third lines. A rather broad strip of ground-colour between 2nd and 3rd lines, of which the latter is continuous from costa to end of 2nd; the 4th very close to 3rd and composed of four lunules, the last of which practically fuses with the 3rd line between 2nd and 3rd median nervules. The 5th and 6th lines continuous and parallel from apex to anal angle, the 5th line being slightly lunulate. A thin dark line completes the hind-margin. Cilia white, outwardly touched with fuscous. *Hind-wing*: ground-colour as in fore-wing with the following white lines: two parallel lines from costal nervure across centre of cell to median nervure, a short one continued to inner margin; a third line from costal nervure to

inner margin, of which the first fascia is outwardly oblique and disconnected, the second closer cell, third inwardly oblique and continuous, fourth split and triangulate, the fourth and fifth lines run parallel from apex to anal angle; of which the first fascia of the fourth line is shifted outwards so as to join the second fascia of the fifth line while the first fascia of that line is almost obsolete; the 2nd and 3rd fascia of the fifth line are slightly split longitudinally. The sixth line very lunulate, the seventh thin and continuous as in fore-wing. Cilia as in fore-wing. At anal angle between 1st and 2nd median nervules a dark spot laterally touched with iridescent light green scales and inwardly margined with dark orange; a thin fuscous and white filamentous tail.

Exp. al. 25 mm.

Type, Male¹, Quop, Sarawak (Sar. Mus.).

Described from a single example, and named after H. H. The Rajah Muda of Sarawak.

Mr. H. H. Druce who examined it in June 1910, reported it as unknown to him. It may be easily distinguished from all other species of *Lampides* by the curious position of the white fasciae on the underside.

Genus, THYSONOTIS, Hübner.

355. *Thysonotis schaeffera*, Esch.

Lycaena schaeffera, Esch. Kotzeb. Reise. iii. p. 216, t. 5, fig. 25. a, b (1821).

Labuan (Low); Sandakan.

Genus, CATOCHRYSOPS, Boisduval.

356. *Catochrysops strabo*, Fab.

Hesperia strabo, Fab. Ent. Syst. Vol. III. pt. I. p. 287 (1793).

Sandakan (Pryer); Labuan (Low); Sarawak: Lobang, Simanggang, Kuching and Quop (Sar. Mus.); S. E. Borneo, near Bandjarmasin (Wahnes).

Distribution: India, Philippines, China, Malaya to Australia.

356a. Form, *lithargyria*, Moore.

Catochrysops lithargyria, Moore, Ann. Mag. Nat. Hist. (4) XX. p. 340 (1877).

Sarawak: Lobang, Bidi, Paku, Santubong, Tambak, Kuching (Sar. Mus.).

1. Recorded by Mr. Shelford in the Museum catalogue as a male, but the body has since been lost so I am unable to verify this.

Distribution: as the typical form.

From the data on Sarawak examples it appears that this form has been taken in the same locality as the typical *strabo*, but there is not sufficient material to show whether they are taken together in the same month.

357. *Catochrysops pandava*, Horsf.

Lycaena pandava, Horsfield, Cat. Lep. Mus. E. I. C. p. 84 (1829).

Catochrysops nicola, Swinhoe, Proc. Zool. Soc. Lond. p. 132 (1885).

Kudat (Mus. Druce)—A female of the wet-season form.

Distribution: India and Malaya,¹—Peninsula, Java, Bantam and Natuna Isles.

358. *Catochrysops cnejus*, Fabr.

Hesperia cnejus, Fabr. Ent. Syst. Suppl. p. 430 (1798).

Lampides contracta, Butler, Proc. Zool. Soc. Lond. p. 406, pl. 39, fig. 3 (1880).

Catochrysops ella, Butler, *op. cit.* p. 606 (1881).

Catochrysops hapalina, Butler, *op. cit.* p. 148, pl. 24, figs. 2, 3, ♂ and ♀ (1883).

Catochrysops theseus, Swinhoe, *op. cit.* p. 131, pl. 9, fig. 8, ♂ (1885).

Mt. Kina Balu (Waterstradt); Labuan (Low); Sarawak: Santubong, Kuching, Satap, Quop (Sar. Mus.).

Distribution: India to Malaya, extending to Australia and the South Sea Islands.

The Sarawak specimens vary in size and in the development of the anal spots of the hind-wing in both sexes.

[The larva feeds on *Cycas* plants and does much damage in Singapore Gardens.] R. S.

Genus, TARUCUS, Moore.

359. *Tarucus waterstradti*, H. H. Druce.

Tarucus waterstradti, H. H. Druce, *op. cit.* p. 585, pl. XXXII. fig. 21, ♀ (1895).

Kina Balu (Waterstradt).

Nearly allied to *T. theophrastus*, Fab.

360. *Tarucus plinius*, Fabr.

Hesperia plinius, Fabr. Ent. Syst. iii. p. 284 (1793).

Lawas (Everett).

1. De Nicéville and Martin remark on the curious absence of this species from Sumatra.

Distribution: Ethiopian Region in part. N. W. Himalayas to Kumaon, plains of Northern India, Central and Western India, Ceylon, Assam, Burma, Tenasserim (north), China, Formosa and Java. De Nicéville¹ says it does *not* appear in the Malay Peninsula.

Genus, *CASTALIUS*, Hübner.

361. *Castalius rosimon*, Fabr.

Papilio rosimon, Fabr. Syst. Ent. p. 523 (1775).

Borneo (Wahnes)—probably from Labuan or S. E. Borneo (Druce).

Distribution: Peninsular India, Ceylon, Assam, Burma, Tenasserim, Andamans and Nicobars, Siam, Malay Peninsula and Archipelago.

362. *Castalius ethion*, Doubl. and Hew.

Lycaena ethion, Doubleday and Hewitson, Gen. Di. Lep. ii. p. 490, pl. 76, fig. 3, ♂ (1852).

Sandakan (Pryer); Labuan (Low, Wahnes and Waterstradt); Lawas; Sarawak (Everett); Lawas, Malinau, Samarahan, Matang, Bau, Paku, Serambu and Santubong (Sar. Mus.).

Distribution: Southern India, Ceylon, Assam, Burma, Tenasserim, Siam, Malay Peninsula, Sumatra and Java.

The Bornean forms are typical; the female is rare in Sarawak.

363. *Castalius roxus*, Godt.

Polyommatus roxus, Godart, Encycl. Méth. IX. p. 659 (1823).

Castalius roxana, de Nicév., Journ. Bomb. Nat. Hist. Soc. X. p. 633 (1897).

Lawas (Everett); Borneo (de Nicéville).

Druce¹ writes that he has a single female of this species in his collection; this and de Nicéville's appear to be the sole records for the species in Borneo.

Distribution: Burma, Tenasserim, the Andamans, Philippines, Malay Peninsula, Sumatra and Java.

364. *Castalius elna*, Hew.

Lycaena elna, Hewitson, Exot. Butt. V. pl. I. fig. 8, ♀ (1876).

Cupido roxus, Druce (*nec* Godart), Proc. Zool. Soc. Lond. p. 348 (1873).

1. *Butt. Ind.* vol. III. p. 195 (1890.)

2. *Proc. Zool. Soc. Lond.* p. 587, 1895.

Kina Balu (Waterstradt); Sandakan (Pryer); Labuan (Low and Wahnes); Sarawak: ulu Lawas and Marapok Mts., Malinau, Kuching and Santubong (Sar. Mus.).

Distribution: Indo-Malaya to Java.

Apparently rather local in Sarawak, but plentiful where it occurs.

The upperside pattern¹ is so remarkably like that of the female *Lycaenopsis haraldus*, that I am inclined to think that these two forms, together with the female *Castalius ethion* and one or two other *Lycaenopsis* females (e.g. *L. lingga*, *L. sonchus*), form a mimetic association (pseudaposematic, i.e., illustrative of the Batesian hypothesis, in which the *Lycaenopsids* are probably palatable and gain protection by mimicking the distasteful *Castalius* species).²

Genus, POLYOMMATUS, Latreille.

365. *Polyommatus baeticus*, Linn.

Papilio baeticus, Linnaeus, Syst. Nat. ed. XII. i. p. 789 (1767).

Mt. Kina Balu (1200-1500 m. Waterstradt); Sandakan (Pryer); Sarawak: Buntal and Kuching (Sar. Mus.).

Distribution: Europe, Africa, Asia through Malaya to Australia and the Hawaiian Islands.

There are several records of its migratory habits and that, together with the fact that the larva can subsist on many leguminose plants, shows presumably why it is so widely distributed.

The series in the Sarawak Museum was taken at Buntal and Kuching in 1894 and 1896; after that no further specimens seem to have been captured until March and April of this year (1911) when it was met with by no means rarely in the vicinity of Kuching.

Sub. Family III. CURETIINAE.

Genus, CURETIS; Hübner.

This genus has provided much material for discussion on the relative values of the species described under its name; and to quote

1. The upperside colouring in both species is a plain but striking pattern of black surrounding a broad discal white band across both wings. In the underside they differ widely: *haraldus* is a somewhat typical *Lycaenopsis* form, while the pattern of *elna* is the typical black and white blotched pattern of *Castalius*.

2. The only other suggestion of mimicry among Bornean Lycaenidae, that I can find comes from Mr. Shelford, who regards *Thrix gama* as a mimic of *Eoonyxides tharis*, and the two species, *Poritia plateni* and *Araotes lapithis* as mimics of the common species, *Drupadia boisduvalii* var. *atra* and *Biduanda thesmia*. In commenting thereon, he writes, "I am, however, quite certain that *E. tharis*, *D. boisduvalii* and *B. thesmia* are distasteful species, whilst the great rarity of the mimicking species points to the conclusion that they are Batesian mimics." *Proc. Zool. Soc. Loral.* 1902, p. 263).

Col. Bingham, "until extensive breeding experiments are undertaken it will be impossible to attain any certainty as to whether there are two or a dozen distinct forms." In treating the Indian species, this authority divides them into two species only, and I have endeavoured to treat the Bornean forms in a similar way.

Col. Bingham separates the two species thus:—

- A. ♂ ♀. Underside fore-wing: discal and subterminal markings or bands parallel, not anteriorly convergent = *C. thetis*.
- B. ♂ ♀. Underside fore-wing: discal and subterminal markings or bands anteriorly convergent = *C. bulis*.

366. *Curetis thetis*, Drury.

Papilio thetis, Drury, Ill. Exot. Ent. ii. p. 16, pl. 9, figs. 3, 4, ♀ (1773).

Papilio phaedrus, Fabr. Sp. Ins. ii. p. 125 (1781).

Curetis saronis, Moore, Proc. Zool. Soc. Lond. p. 587 (1871).

Curetis glariosa, Moore, *op. cit.* p. 522, pl. 48, fig. 1, ♂ (1883).

Curetis arcuata, Moore, *op. cit.* p. 523, pl. 48, fig. 3 (1883).

form (a) *tagalica*, Feld.

Anops tagalica, Feld. Reise Novara, Lep. ii. p. 221, pl. XXVIII. figs. 19, 20 (1865).

Labuan (Low); Banguay Island (Waterstradt).

I have not seen an example of *tagalica*, Feld. but H. H. Druce writes:—" *C. tagalica* is scarcely distinguishable from *C. phaedrus*, Fabr., on the upperside, but on the underside Bornean specimens are usually very strongly suffused with blackish brown."

Then Bingham says:—" *C. phaedrus*, Fabr., varies so little from *thetis* as to be scarcely ranked even as a variety." So *C. tagalica* may be regarded as a form only, of *thetis*.

form (b) *nesophila*, Feld.

Phaedra nesophila, Feld. Wien. Ent. Mon. VI. p. 289 (1862).

Curetis barsine, Druce (*nec* Feld.), Proc. Zool. Soc. Lond. p. 353 (1875).

Kina Balu (Waterstradt); Sarawak (Platen); Labuan (Low, Waterstradt and Wahnes); Lawas, Trusan, Limbang, Baram, Banting, Santubong, Kuching, Satap, Quop (Sar. Mus.).

First described from Luzon.

Injury. ♀, quadrate bite from upper part of hind-margin of right hind-wing.

form (c) *insularis*, Horsf.

Phaedra insularis, Horsfield, Cat. Lep. E. I. C. p. 125 (1829).

Kina Balu (Waterstradt).

Distribution: Java, Sumatra and Malay Peninsula.

De Nicéville prefers to treat this as a separate species, but as the parallel fasciae of the underside (shown in Distant's figure) bring it under the definition of *thetys*, I prefer to treat it as another form of that species.

form (d) *minima*, Distant and Pryer.

Curetis minima, Distant and Pryer, Ann. Mag. Nat. Hist. ser. 5. Vol. XIX. p. 265 (1887).

Sandakan (Pryer).

Described as being near *C. insularis*, Horsf.

form (e) *aesopus*, Fabr.

Papilio aesopus, Fab. Sp. Ins. Vol. II. p. 125 (1781).

Kina Balu (Waterstradt); Labuan (Waterstradt and Wahnes); S. E. Borneo, near Banjarmasin (Wahnes); Sarawak: Kuching and Satap (Sar. Mus.).

The position of *C. aesopus*, Fabr. seems to me rather doubtful. First of all Bingham says of it: "With regard to *C. aesopus*, Fabr., that also falls as a synonym of *C. thetis*, as acknowledged by Fabricius himself. The type, a ♀, is in the Banksian collection now in the British Museum, and is undoubtedly a ♀ of ordinary *C. thetis*, Drury." De Nicéville supports this view having bred females exactly like *aesopus* from *thetis*.

Now in order to completely fulfil Bingham's definition of *C. thetis* the underside fasciae must be parallel; but in Distant's description of *aesopus* he says "anterior wings with a palish blue *oblique* lunulated fascia, etc." and his figures, ♂ and ♀, show typical *bulis* underside with convergent fasciae. He too says he has compared his specimens with Fabricius' type. So the position is this: the author of *aesopus* admits that his own species (*aesopus*) is the same as *thetis*; de Nicéville breeds *aesopus* from *thetis*; Bingham says of *aesopus* "undoubtedly female of ordinary *C. thetis*, Drury." Kirby and Moore also adopt this view. On the other side is Distant, who examines Fabricius' type and then figures a specimen with typical *bulis* underside, though he treats *aesopus* as a distinct species; and Butler supports this view.

Six ♂ examples in the Sarawak Museum agree well with Distant's description and figure for the upperside, but on the underside the two lines of fasciae are not nearly so convergent; though they cannot be called strictly parallel as in typical *thetis*. From the three forms in the Sarawak Museum it

seems that *aesopus* is intermediate between *thetis* and *bulis*; de Nicéville comments on the *upperside* markings forming a connecting link and I think the *underside* markings bear that out too.

The following are the characteristics of the three Sarawak Museum forms (only males compared):—

(i) *Upperside*: inner-marginal black border forms a strongly curved arch: the ends of which form an even edging along the costa, and along the hind-margin from 1st median nervule to anal angle. The actual edge of this black margin is slightly irregular, in no two specimens alike, though the general impression is that of an evenly rounded arch. No extension of black along inner margin.

Underside: fasciae parallel

= *C. thetis*, Drury, form *nesophila*, Feld.

(ii) *Upperside*: black marginal border heavier: at a point less than a quarter of the length of costa from the base, the black begins to broaden, extending unevenly to end of cell and across to 2nd median nervule thus forming an angulated inner edge to this marginal border; thence it extends evenly, but twice as broad as in *nesophila*, to anal angle, where it becomes diffuse along a small part of the inner margin.

Underside: fasciae not quite parallel, but suggesting the anterior convergence of typical *bulis* = form *aesopus*, Fab.

(iii) *Upperside*: marginal border more heavily developed; inner edge rather more angular and from 1st median nervule to half way along inner margin the border is developed into an anal patch.

Underside: fasciae sharply convergent

= *C. bulis*, Doubl. and Hew. form, *malayica*, Feld.¹

367. *Curetis bulis*, Doubl. and Hew.

Anops bulis, Doubleday and Hewitson, Gen. Di. Lep. ii. p. 473, pl. 75, fig. 5, ♂ (1852).

Anops malayica, Felder, Novara Reise, Lep. ii. p. 221, pl. 28, fig. 18, ♂ (1865).

Curetis dentata, discalis et stigmata, Moore, Proc. Zool. Soc. Lond. pp. 137 and 138 (1879).

Curetis angulata, Moore, *op. cit.* p. 522, pl. 48, fig. 2, ♂ (1883).

Curetis felderi, Distant, Rhop. Malay. p. 203, pl. 24, fig. 3, ♂ and pl. 22, fig. 26, ♀ (1884).

1. I ought perhaps to state that the above views are put forward after the examination of *Bornean* examples only. These, and other suggestions as to nomenclature throughout this paper, being founded on the examination of *Bornean* specimens only, are intended to serve as material for any future Monograph of Eastern Lycaenidae, rather than presuming to correct the views of other authors of far greater experience and ability than the present writer.

form *malayica*, Feld.

Sandakan (Ind. Mus.) ; Kina Balu (Waterstradt) ; Sarawak : ulu Lawas, Baram, Santubong, Quop, Matang—3,200 ft., Kuching, Satap (Sar. Mus.) ; near Banjarmasin (Wahnes).

Distribution: Sikkim, South Tenasserim, Malacca and Sumatra.

Sub. Family IV. LIPHYRINAE.

Genus, LIPHYRA, Westwood.

368. *Liphyra brassolis*, Westw.

Liphyra brassolis, Westwood, Proc. Ent. Soc. Lond. (3) ii. p. 31 (1864).

Sterosis robusta, Felder, Novara Reise, Lep. ii. p. 219, pl. 27, figs. 10, 11, ♀ (1865).

Sarawak (Hewitson) ; Kuching, Mt. Matang—3,200 ft., Santubong (Sar. Mus.).

Distribution: Sikkim to Malay Peninsula, Celebes, Gilolo, Australia.

There are two males and two females in the Sarawak Museum which are rather heavily marked with dark fuscous. In the males this fuscous margin extends over the apical two-thirds of the fore-wing leaving only a small spot of tawny-yellow ground-colour at end of cell besides the basal third of the fore-wing. The females agree well with Distant's figure in *Rhopalocera Malayana*; but are more heavily marked than the female figured by de Nicéville.

The only point to remark is that Bingham says:—"specimens from Malacca and south and east through the sub-region have a decreasing amount of black colouring on the upperside. Australian specimens have the least of all." The Sarawak examples however in this peculiarity are darker than the Indian forms.

The four Sarawak specimens bear no notes as to crepuscular habits. One is noted as being caught "fluttering in the grass" on the summit of Mt. Matang.

[The wings of a ♂ of this species were found lying on the jungle-floor at Trusan, they had evidently been newly dismembered by some bird or reptiles.

The larva lives in the nests of the "Karinga" ant, *Ecophylla smaragdina*, Fab.] R. S.

Sub. Family V. PORITIINAE.

Genus, PORITIA, Moore.

369. *Poritia sumatrae*, Feld.

Pseudodipsas sumatrae, Felder, Novara Reise, Lep. ii. p. 259, pl. 36, figs. 24, 25, 26, ♂ and ♀ (1865).

Labuan (Low) ; Brunei (Waterstradt) ; Sarawak : Limbang, Kuching and Santubong (Sar. Mus.).

Distribution: South of Tenasserim to Malay Peninsula and Sumatra.

Not rare or variable in Sarawak.

370. *Poritia phormedon*, H. H. Druce.

Poritia phormedon, H. H. Druce, Proc. Zool. Soc. Lond. p. 566, pl. XXXI. figs. 16, ♂, 17, ♀ (1895).

Kina Balu (Waterstradt).

Unknown to me.

371. *Poritia pellationia*, Dist. and Pryer.

Poritia pellationia, Distant and Pryer, Ann. Mag. Nat. Hist. ser. 5. Vol. XIX. p. 265 (1887).

Sandakan.

Near *P. pleurata*, Hew., a Singapore species.

372. *Poritia phaluke*, H. H. Druce.

Poritia phaluke, H. H. Druce, Proc. Zool. Soc. Lond. p. 567, pl. XXXI. fig. 15, ♂ (1895).

Sandakan (Cator) ; Kina Balu (Waterstradt) ; Sarawak : Kuching (Sar. Mus.).

373. *Poritia philota*, Hew.

Poritia philota, Hewitson, Trans. Ent. Soc. Lond. p. 346 (1874).

N. E. Borneo (coll. Godman and Salvin) ; Labuan (Wahnes) ; Sarawak : Kuching and Lundu (Sar. Mus.).

Distribution: Philippines, Sumatra and Java.

374. *Poritia plateni*, Staud.

Poritia plateni, Staudinger, Iris, ii. p. 104, pl. I. fig. 8 (1889).

Kina Balu (Waterstradt) ; Sarawak : Kuching—April to June—(Sar. Mus.).

Described originally from Palawan ; also recorded from Sumatra.

375. *Poritia phama*, H. H. Druce.

Poritia phama, H. H. Druce, Proc. Zool. Soc. Lond. p. 568, pl. XXXI. fig. 18, ♂ (1895).

Kina Balu (Waterstradt).

Druce also records an example from Java.

376. *Poritia phalena*, Hew.

Poritia phalena, Hewitson, Trans. Ent. Soc. Lond. p. 344 (1874).

Labuan, ♂ and ♀ (Waterstradt); Sandakan, ♀ ♀ (Cator); Sarawak: near Kuching, ♂ and ♀ (Sar. Mus.).

Distribution: Assam, Burma, Singapore and Sumatra.

Mr. Druce kindly identified one of the two females in the Sarawak Museum.

377. *Poritia pheretia*, Hew.

Poritia pheretia, Hewitson, *t. c.* p. 346 (1874).

Sandakan.

378. *Poritia phalia*, Hew.

Poritia phalia, Hewitson, *t. c.* p. 345, ♂ (1874).

Poritia potina, Hewitson, *t. c.* p. 347, ♀ (1874).

Simiskina fulgens, Distant, *Entomologist*, XIX. p. 12 (1886).

Borneo (Low—Brit. Mus.); Sarawak: Kuching—March to July—(Sar. Mus.).

Distribution: Tenasserim, Malay Peninsula.

The two females in the Sarawak Museum approach the light female figured by Bingham (*Fauna Brit. Ind.* Butterflies ii. p. 468); but the post discal row of spots on the upperside of hind-wing, present in the Sarawak specimens, is absent in Bingham's figure.

379. *Poritia philura*, H. H. Druce.

Poritia philura, H. H. Druce, *Proc. Zool. Soc. Lond.* p. 569, pl. XXXII. fig. 1, ♂ (1895).

Mt. Kina Balu (Waterstradt); Sarawak: Kuching, ♂ and ♀ (Sar. Mus.).

Druce described this species from a single specimen sent him by Dr. Staudinger. There appears to be no other record of its capture and the female is undescribed.

The Sarawak Museum examples were taken near Kuching in March, May and October (1896) and one in August of this year (1911).

I append a description of the female.

Upperside. Orange-yellow ground-colour; hind-marginal, inner-marginal, and post-discal bands of dark fuscous-brown. *Fore-wing*: ground-colour orange-yellow; a costal edging of dark fuscous—entering the base of cell only—extends along two-thirds of the costa and, traversing the disco-cellulars, meets the third median nervule thus forming a short oblique post-discal fascia. Apex and hind-marginal border, which widens at anal angle, of the same dark fuscous. A broad dark fuscous fascia from base along inner margin narrowing towards hind-marginal border, which it does not quite reach. A few dark fuscous scales join this fascia to the oblique post-discal fascia. *Hind-wing*: ground-colour orange-yellow, paler along the costa.

Basal region fuscous. A dark fuscous band from apex to inner margin, a short hind-marginal band of dark fuscous, interrupted by the nervules, from anal angle to third median nervule, succeeded outwardly by thin edging of ground-colour along the middle of which runs a thin dark fuscous line. Cilia fuscous.

Underside, as in male; perhaps more orange-yellow than the yellow-buff of the male.

Exp. al. 30 mm.

380. *Poritia pharyge*, Hew.

Poritia pharyge, Hewitson, Trans. Ent. Soc. Lond. p. 345 (1874).

Labuan (Wahnes); North Borneo (Ind. Mus.); Sarawak: Lundu and Kuching—March to Sept.—(Sar. Mus.).

Distribution: Siam, Perak, Penang, Sumatra and Java.

The uppersides of two females in the Sarawak Museum are uniform dark fuscous in colour, and the undersides are fuscous agreeing well with the undersides of seven males; but a second female identified by Mr. Druce has the ground-colour of the underside a light straw colour; and the upperside has a well marked purple discal patch in the fore-wing, and traces of that colour in the disc of the hind-wing.

381. *Poritia pasira*, sp. n. (Fig. 2).

MALE. *Upperside*. Exactly like preceding species (*P. pharyge*, Hew.) in every detail. *Underside*. Dull fuscous brown. *Fore-wing*: two almost imperceptible light thin parallel lines traverse the lower portion of the wing, one hind-marginal and the other discal; these two lines are continued a little more distinctly in *hind-wing*; the hind-marginal line becomes a little whiter towards anal angle, and is outwardly edged with dark fuscous. The discal line remains parallel to hind-margin and joins the inner margin at end of abdomen. Below the 3rd and 2nd median nervules on this line are two dark brown spots; below 1st median nervule is a trace of another.

FEMALE. *Upperside*. Uniform dark fuscous; cilia light. *Underside*. Dull ochreous fuscous; basal region very slightly darker and bordered by dark ochreous line from centre of costa to centre of inner margin in fore-wing and continued across centre of hind-wing. A thin light line darkened on each side, runs parallel to hind-margin in both wings some 5 mm. from discal line and 3 mm. from hind-margin, slightly curved inwards towards costa of fore-wing. In the hind-wing, the discal line is made prominent by two ochreous guttulate spots below 3rd and 2nd median nervules as in the male. The shape of the hind-margin distinguishes it from other species

of *Poritia*, being sharp at apex, then curved in slightly to third median nervule which, together with the second and first median nervules, is slightly prolonged, thus giving an angulate appearance to the wing. A thin white line edges the hind-margin and the sub-marginal line is distorted to follow the vagaries of the hind-margin itself.

Exp. al. ♂ 30 mm. ♀ 38 mm.

Habitat: Mt. Matang (2,000 ft.) and Kuching, Sarawak.

Types, ♂ and ♀, in Sarawak Museum.

382. *Poritia solyma*, de Nicév.

Simiskina solyma, de Nicéville, Journ. Asiat. Soc. Beng. Vol. LXIII. pt. 2, p. 29, pl. IV. fig. 10 (1894).

Labuan (Waterstradt).

Genus, ZARONA, de Nicéville.

383. *Zarona jasoda*, de Nicéville, Journ. Asiat. Soc. Beng. Vol. LVII. pt. 2, p. 280, pl. 14, fig. 5, ♂ (1888).

A single male specimen from Sandakan captured by Mr. D. Cator, seems to be the only record for Borneo of this species.

Distribution: Burma and Tenasserim.

Sub. Fam. VI. ARHOPALINAE.

Genus, SURENDRA, Moore.

384. *Surcndra amisena*, Hew.

Amblypodia palowna, Hewitson, Cat. Lycæn. B. M. p. 13, pl. VII. figs. 74-78, ♀ (1862).

Amblypodia amisena, Staudinger, Iris., Vol. II. p. 131, pl. II. fig. 3 (1889).

Borneo (Low); Mt. Kina Balu (Everett); Trusan, Baram, Santubong, Mt. Matang, Kuching, Quop and Pangkalan Ampat (Sar. Mus.).

Distribution: Malacca, Nias, Sumatra, Balabac and Palawan.

The Sarawak females show both forms figured by Bethune-Baker (*Trans. Zool. Soc. Lond.* Vol. XVII. pl. I. figs. 4 and 5).

Injury. ♂, shallow bite removing the anal half of hind-margin of the left fore-wing.

Genus, IRAOTA, Moore.

385. *Iraota rochana*, Horsfield.

Amblypodia rochana, Horsfield, Cat. Lep. Mus. E. I. C. p. 108, n. 40 (1829).

Thecla timoleon, Boisduval (*nec* Stoll), Sp. Gén. Vol. I. pl. XXII. fig. 4, ♀ (1836).

Iraota boswelliana, Distant, Rhop. Malay. p. 258, n. I. pl. XXII. fig. 23, ♀ (1885).

Mt. Kina Balu (Waterstradt); Labuan (Low and Mus. Staudinger); Busau, Kuching, Mt. Matang—3,200 ft. and Mt. Santubong—2,800 ft. (Sar. Mus.).

Distribution: Mergui, Philippines, Java, Sumatra, Billiton, Penang and Singapore.

Frequents the higher slopes (including the summits) of Mts. Matang and Santubong in Sarawak. Flies with great rapidity. Sarawak males show a certain amount of variation in the extent of the iridescent blue, which is much reduced in some examples. Bethune-Baker writes that the female has three distinct tails, while the male has but two. The three Sarawak females before me are exactly similar to the male in this respect, having *two* tails and one short tooth-like projection from the second median nervule.

Injuries. (i) ♂, small symmetrical bite removing the anal angle of both hind-wings. (ii) ♀, large quadrate symmetrical bite removing anal portion of both hind-wings.

386. *Iraota lazarena*, Feld.

Myrina lazarena, Felder, Wien. Ent. Monats. vi. p. 293, n. 61 (1862).

Borneo.

Distribution: Celebes and Philippine Islands.

387. *Iraota nila*, Distant.

Iraota nila, Distant, Rhop. Malay. p. 462, n. 2, pl. XLIV. fig. 24, ♀ (1886).

Mt. Kina Balu (Waterstradt); Mt. Santubong—2,800 ft., Mt. Matang—3,200 ft., Kuching and Satap (Sar. Mus.).

Distribution: Malacca, Perak and Sumatra.

Frequently taken on the summits of Mts. Santubong and Matang, and occasionally on the lower ground in those neighbourhoods. All the females in the Sarawak Museum have very narrow black hind-marginal borders on the upperside, differing thus from Distant's figure which shows quite a broad border. Druce noticed the same difference in comparing some females from Kina Balu.

Injury. ♀, one large jagged triangular bite, removing anal portion of left fore-wing and apical regions of both hind-wings; the piece removed from the right hind-wing is equal in area and shape to the sum of the two pieces removed from the left wings, thus indicating that the attack was made when the insect was at rest with wings imperfectly closed.

Genus, AMBLYPODIA, Horsfield.

388. *Amblypodia narada*, Horsfield.

Amblypodia narada, Horsfield, Cat. Lep. Mus. E. I. C. p. 98, pl. I. fig. 8 (1829).

Amblypodia taoona, Moore, Proc. Zool. Soc. Lond. p. 835 (1878).

Sarawak (coll. Godman and Salvin); Limbang River and Kuching (Sar. Mus.).

Distribution: Mergui, Andamans, Malay Peninsula and Archipelago.

This beautiful species is rare in Sarawak. I was lucky enough to catch a fine male recently feeding on animal *excreta* on a sunny spot among the stones of a small mid-river island in the upper waters of the Limbang River (Kuala Madalam).

389. *Amblypodia anita*, Hew.

Amblypodia anita, Hewitson, Cat. Lycaen. B. M. p. 14, pl. VIII. figs. 90, 91, ♂ (1862).

Amblypodia narada, var. *erichsonii*, Wood-Mason and de Nicéville, Journ. Asiat. Soc. Beng. Vol. XLIX. pt. 2, p. 234, n. 53 (1880).

Amblypodia naradoides, Moore, Proc. Zool. Soc. Lond. p. 141 (1879).

Amblypodia darana, Moore, *l. c.* p. 141.

Amblypodia arracana, Grose-Smith, Ann. Mag. Nat. Hist. ser. 5. Vol. XX. p. 268 (1887).

Trusan (Everett); Labuan (Low); Bidi (Sar. Mus.).

Distribution: India, Ceylon, Siam, Sumatra, Sulu Island.

Injury. ♀, large quadrate piece removed from hind-margin of left hind-wing.

Genus, ARHOPALA, Boisduval.

Bethune-Baker records 196 species of this genus, of which 59 are found in Borneo. Adding the five species described here as new, the total now therefore is 64 for this country.

390. *Arhopala meander*, Boisd.

Arhopala meander, Boisduval, Voy. 'Astrolabe,' Ent. p. 76 (1832).

Arhopala adherbal, Grose-Smith, Rhop. Exot. Vol. III. p. 10, pl. XXV. fig. 3 (1902).

Arhopala appianus, Grose-Smith, *t. c.* p. 11, pl. XXV. fig. 4.

South East Borneo.¹

Distribution: Malay Archipelago to New Guinea, Queensland and New Zealand.

1. "One very magnificently marked (underside) specimen from the collection of Herr Ribbe from South-east Borneo" (G.T. Bethune-Baker, Proc. Zool. Soc. Lond. p. 658, 1896).

391. *Arhopala centaurus*, Fab.

Papilio centaurus, Fabricius, Syst. Ent. p. 520, n. 329 (1775).

Polyommatus helus, Godart, Enc. Méth. Vol. IX, p. 652, n. 119 (1823).

Amblypodia pseudo-centaurus, Doubleday, List Lep. B. M. Vol. II, p. 24 (1847).

Amblypodia nakula, Felder, Wien. Ent. Monatsch. Vol. IV, p. 395, n. 4 (1860).

Nilasera pirama, Moore, Lep. Ceyl. Vol. I, p. 116, pl. XLIII, figs. 3, a, b, c (1881).

Nilasera pirthous, Moore, Proc. Zool. Soc. Lond. p. 531 (1883).

Sandakan (Pryer); Labuan (Low); Limbang, Buntal, Mt. Matang, Kuching, Bau and Busau (Sar. Mus.).

Distribution: India and Malaya.

In some of the Sarawak females the light-blue edging to the cell-spots on the underside of the fore-wing is absent: but it is present in others and in all the males.

392. *Arhopala eridanus*, Feld.

Amblypodia eridanus, Felder, Sitz. Akad. Wiss. Wien. XL, p. 453 (1860).

Amblypodia polita, Röber, Iris, Vol. I, p. 199, pl. IX, fig. 14 (1887).

This species has been recorded from Palawan, Cagayan and Balabac Islands off the north coast of Borneo, so that its future capture on the mainland may yet be recorded. Although Cagayan is some 60 miles off the coast of Borneo, this latter is the nearest large island and so it seems permissible to stretch a point and allow the inclusion of *eridanus* in the "Bornean" Fauna; the neighbouring archipelagos of Palawan and Sulu are well over 100 miles away. Balabac lies between Palawan and the northern coast of Borneo.

393. *Arhopala lycaenaria*, Feld.

Amblypodia lycaenaria, Felder, Wien. Ent. Monatsch. Vol. IV, p. 396, n. 8 (1860).

Amblypodia olinda, Druce, Proc. Zool. Soc. Lond. p. 351, pl. XXXIII, fig. 5, ♀ (1873).

Amblypodia buxtoni, Distant, Rhop. Malay. p. 464, n. 20, pl. XLIV, fig. 18, ♀ (1886).

Sandakan (Pryer); Labuan (Low); Limbang, Santubong and Kuching (Sar. Mus.).

Distribution: Malay Peninsula to Sumatra and Billiton.

Common in Sarawak.

Injury. ♀, small bite from anal angle of right fore-wing.

394. *Arhopala myrtale*, Staud.
Amblypodia myrtale, Staudinger, Iris, Vol. II. p. 126, pl. I. fig. 17 *nec* 18 (1889).
 Sandakan (Pryer); Labuan (Low); Santubong and Kuching (Sar. Mus.).
 There are five males in the Sarawak Museum.
 Also recorded from Palawan.
395. *Arhopala aida*, de Nicéville.
Arhopala aida, de Nicéville, Journ. Bomb. Nat. Hist. Soc. Vol. IV. p. 168, n. 7, pl. A. fig. 1, ♂ (1889).
 Bethune-Baker records "two specimens from Labuan—a male like type, and a female small and violet coloured" (*Proc. Zool. Soc. Lond.* p. 666, 1896), but remarks in his monograph in *Trans. Zool. Soc.* seven years later that the female is unknown.
 Also recorded from Burma.
396. *Arhopala labuana*, Bethune-Baker.
Arhopala labuana, Bethune-Baker, Proc. Zool. Soc. Lond. p. 667, pl. XXX. figs. 12 ♂, 13 ♀ (1896).
 Labuan, Kuching (Sar. Mus.).
 Also recorded from Mindanao.
397. *Arhopala arzenius*, Feld.
Arhopala arzenius, Felder, Reise Nov. Lep. Vol. II. p. 236, tab. XXIX. fig. 18 (1865).
 A single example from Kuching, Sarawak, constitutes the first record of this species for Borneo.
 Previously recorded from Luzon and Batchian only.
 Mr. Druce kindly identified the specimen.
398. *Arhopala vihara*, Feld.
Amblypodia vihara, Felder, Wien. Ent. Monatsch. Vol. IV. p. 395, n. 5 (1860).
 Labuan, Kuching (Sar. Mus.); Tameang-Lajang.
Distribution: Malacca, Nias, Sumatra.
 There are two females in the Sarawak Museum; the undersides agree exactly with the male, but on the upperside the hind-marginal borders are much deeper, widening across the apex in fore-wing, but continuing evenly round the costa of hind-wing. The markings on the underside of both sexes vary very little, except for the small spot below the first median nervule, which is absent altogether in one example.
399. *Arhopala adorea*, de Nicév.
Arhopala adorea, de Nicéville, Butt. Ind. Vol. III. p. 238, n. 789, pl. frontispiece, fig. 139, ♂ (1890).
 Kuching (Sarawak).

Distribution: India to Malay Peninsula and Sumatra. Previously unrecorded from Borneo. The four examples (3 ♂, 1 ♀) in the Sarawak Museum are of the violet form.

400. *Arhopala sandakani*, Bethune-Baker.

Arhopala sandakani, Bethune-Baker, Proc. Zool. Soc. Lond. p. 671, pl. XXXI. fig. 2, ♂ (1896).

Sandakan and Silam.

Also recorded from Pulo Bai and Java.

401. *Arhopala drucei*, Bethune-Baker.

Arhopala drucei, Bethune-Baker, t. c. p. 661, pl. XXX. figs. 1 ♂, 2 ♀.

Mt. Kina Balu, Kuching and Quop (Sar. Mus.). Confined to Borneo.

Injury. ♂, a small piece removed from anal angle of each hind-wing, almost symmetrically.

402. *Arhopala incerta*, n. sp.

MALE. *Upperside.* Lustrous purple very narrowly margined with fuscous; very closely allied to *A. drucei* from which it differs on the upperside in being a brighter purple. *Underside.* The markings are slightly bolder than in *drucei* and the transverse band of the fore-wing is unbroken and wider than in that species. The 7th spot of this band in *incerta* is very small and isolated, in *drucei* it is large and attached to the 6th.

Exp. al. ♂ 49 mm.

Type. Male. Mt. Matang, Sarawak, March 1898 (Sar. Mus.).

Besides the Type there are two examples in the Sarawak Museum from Kuching.

It is possible that, when further specimens come to hand, intermediate forms will be found, so that *incerta* will have to be merged as a sub-species or variety of *drucei*. At present however it seems sufficiently different to merit specific distinction.

Injury. ♂, long bite from apex of right hind-wing just below the costa, and a similar but smaller piece removed from the apex of left fore-wing.

403. *Arhopala anunda*, Hew.

Amblypodia anunda, Hewitson, Ill. Diurn. Lep. Lyc. p. 14 a, n. 73, pl. III. a, fig. 32 (1865).

Narathura anthelus, Distant, Rhop. Malay. pl. XXIII. fig. 4, ♀, et in parte p. 263 (1886).

Amblypodia anthelus var. *saturator*, Staudinger, Iris, Vol. II. p. 122 (1889).

Labuan (Low); Kuching (Sar. Mus.).

Distribution: Sumatra, Java and the Philippines.

Bethune-Baker records both forms (a brilliant morpho-blue and a violet-blue) from Borneo; the two (δ and η) in the Sarawak Museum are violet-blue.

Injury. η , a very wide but shallow bite removing the hind-marginal edge of the right wings, leaving the apex of fore-wing and anal angle of hind-wing intact.

404. *Arhopala anarte*, Hew.¹.

Amblypodia anarte, Hewitson, Cat. Lyc. B. M. p. 5, n. 20, pl. III. figs. 16 and 17, δ (1862).

Bethune-Baker gives Borneo as one of the habitats of this species, and Druce (in 1873) mentions a female under this name; H. H. Druce however, having examined this specimen, writes in 1895 that this latter record is inaccurate, the specimen being *A. agnis*, Feld. nec *A. anarte*, Hew. As Bethune-Baker mentions Druce as an authority for this species, it is possible that he records it from Borneo on this ground; and that he did not verify H. H. Druce's correction; therefore I include it in the Bornean list with a certain amount of hesitation.

Distribution: Myitta, Burma, Malacca and Macassar.

405. *Arhopala achelous*, Hew.

Amblypodia achelous, Hewitson, Cat. Lyc. B. M. p. 7, n. 30, pl. V. figs. 7, 8, δ (1862).

Labuan (Low); Matang, Santubong and Kuching (Sar. Mus.).

Also recorded from Singapore.

Injury. δ , a long jagged bite removing anal angle of left fore-wing and apical half of hind-margin of left hind-wing.

406. *Arhopala havilandi*, Bethune-Baker.

Arhopala havilandi, Bethune-Baker, Proc. Zool. Soc. Lond. p. 665, pl. XXX. figs. 8 δ , 9 η (1896).

Mt. Kina Balu only.

407. *Arhopala brookei*, Bethune-Baker.

Arhopala brookei, Bethune-Baker, Trans. Zool. Soc. Lond. Vol. XVII. p. 84, pl. I. fig. 29, δ (1903).

Pulo Laut.

Confined to Borneo.

Bethune-Baker (*l. c.*) remarks "one specimen from Pulo Laut in which the brown surface below is quite lustrous and the markings of the primaries are much more distinct."

1. Snellen records *A. anarte*, Hewitson, from Billiton. He gives *Narathura agnis*, Distant (*Rhop. Malay.* p. 273) as a synonym of this species.

408. *Arhopala aroa*, Hew.

Amblypodia aroa, Hewitson, Ill. Diurn. Lep. Lye. p. 13, n. 60, pl. II. fig. 12, ♂ (1862).

Amblypodia pryeri, Butler, Proc. Zool. Soc. Lond. p. 121 (1892).

Sandakan (Pryer); Trusan and Sarawak (Everett); Kusin hills, near Banting, Santubong, Mt. Matang, Bau and Kuching (Sar. Mus.).

Distribution: Malaya—from Burma to New Guinea.

The Sarawak males show two shades of purple, one a lustreless brown-purple, the other a blue-purple approaching the brilliant colouring of *achelous*, Hew.

Injury. ♂, a bite out of anal angle of right fore-wing and another out of anal angle of hind-wing, just missing the tail.

409. *Arhopala elopura*, H. H. Druce.

Arhopala elopura, H. H. Druce, Ent. Mo. Mag. ser. 2. Vol. V. p. 9 (1894).

Sandakan (Pryer); Mt. Kina Balu (Waterstradt).

Confined to Borneo.

Bethune-Baker remarks "this is evidently one of the commonest species of the genus in Borneo;" however the Sarawak collection has yet to meet with it.

410. *Arhopala pseudomuta*, Staud.

Amblypodia pseudomuta, Staudinger, Iris, Vol. II. p. 125 (1889).

Borneo.

Also recorded from Malacca and Sumatra.

Bethune-Baker makes a curiously contradictory statement in regard to this species and *A. rafflesii*. Of *rafflesii* he says, "This species is nearest *pseudomuta*, Staudinger, but can be recognised at once by its much brighter, lighter, and bluer colour". Of *pseudomuta* he says, "This species may be recognised from *rafflesii*, de Nicéville, by its larger size and bluer colour." His description and figure give a dull violet for *pseudomuta*.

411. *Arhopala atosia*, Hewitson.

Amblypodia atosia, Hewitson, Ill. Diurn. Lep., Lye. p. 9, n. 37, pl. II. figs. 8 and 9, ♀ (1863).

Amblypodia aricia, Staudinger, Iris, Vol. II. p. 124, Taf. I. fig. 15 (1889).

Kuching, Mt. Matang, Tambak and Pulo Laut (Sar. Mus.)

Distribution: Malaya.

Four females present slight variation in the upperside marginal border of the hind-wing; in one the broad costal margin continues very nearly as broad along the hind-margin; in two

others it is less; and in a third the broad costal margin remains, but the hind-marginal border is reduced to a mere line. The undersides are constant.

412. *Arhopala epimuta*, Moore (*nec* Hew.).

Amblypodia epimuta, Moore, Cat. Lep. E. I. C. p. 42 (1857).

Arhopala antimuta, de Nicéville, Butt. Ind. Vol. III. p. 277 (1890).

Arhopala atosia? H. H. Druce, Proc. Zool. Soc. Lond. p. 589 (1895).

Borneo (Low); Sandakan (Pryer); Labuan (Low); Santubong, Kuching, Serambu, Bau, Paku (Sar. Mus.).

Distribution: Mergui, Tenasserim and Malay Peninsula.

Very common in Sarawak. The females present the same variation noticed in female *atosia*.

Bethune-Baker says this species is so like *atosia* that practically the only difference is the absence of tails in *epimuta* and the presence of them in *atosia*. Druce records under "*atosia?*," some Bornean specimens which agree exactly with Hewitson's description except that they are tailless, so I conclude they were really *epimuta*.

413. *Arhopala moolaiana*, Moore.

Narathura moolaiana, Moore, Proc. Zool. Soc. Lond. p. 835 (1878).

Amblypodia epimuta, Hewitson (*nec* Moore), Cat. Lyc. B. M. p. 11, n. 51, pl. VI. figs. 59 and 60, ♀ (1862).

Arhopala pastorella, Doherty, Journ. As. Soc. Beng. Vol. LVIII. pt. 2, p. 418, pl. XXIII. fig. 12 (1889).

Arhopala agelastus, de Nicéville, Butt. Ind. Vol. III. p. 278 (1890).

Kuching, Sarawak (Sar. Mus.). The first record from Borneo.

Distribution: India, Burma and Malay Peninsula.

414. *Arhopala amphimuta*, Feld.

Amblypodia amphimuta, Felder, Wien. ent. Monatsch. iv. p. 396 (1860).

Sandakan (Pryer).

Also recorded from Malacca.

415. *Arhopala asia*, de Nicév.

Arhopala asia, de Nicéville, Journ. Bomb. Nat. Hist. Soc. Vol. VII. p. 333, n. 9, pl. H. fig. 16, ♂ (1892).

Labuan (Waterstradt); Trusan, Quop, Kuching (Sar. Mus.).

Distribution: Malay Peninsula and Sumatra.

Bethune-Baker notices that Bornean specimens are somewhat bluer and darker than the type.

416. *Arhopala agesilaus*, Staud.

Amblypodia agesilaus, Staudinger, Iris, Vol. II. p. 127,
Taf. I. fig. 16 (*nec* 17) (1889).

Kuching and Quop (Sar. Mus.).

Distribution: Malaya—Malay Peninsula, Nias Island, Sumatra, Palawan and Mindanao.

Two Sarawak examples have the costal spot of the hind-wings very much reduced, suggesting a transition to the next species (*A. catori*) which is characterized by the complete absence of this costal spot.

But for the differences in genitalia recorded by Bethune-Baker I should be inclined to regard *catori* as a variety only of *agesilaus*.

417. *Arhopala catori*, Bethune-Baker.

Arhopala catori, Bethune-Baker, Trans. Zool. Soc. Lond. Vol. XVII. p. 93, pl. II. fig. 11, ♂; pl. V. figs. 8 and 8 a (1903).

Borneo and Bilit (Bethune-Baker); Mt. Marapok, British North Borneo and Kuching (Sar. Mus.).

Also recorded from Palawan.

418. *Arhopala similis*, H. H. Druce.¹

Arhopala similis, H. H. Druce, Proc. Zool. Soc. Lond. p. 592 (1895).

Arhopala anila, de Nicéville, Journ. Asiat. Soc. Beng. Vol. LXIV. pt. 2, p. 469 (1895).

Sandakan (Pryer); Kuching and Mt. Penrissen (Sar. Mus.).

Distribution: Selangor and Sumatra.

Only three examples in the Sarawak Museum—two taken in August 1896 and the third in May 1899.

419. *Arhopala agesias*, Hew.

Amblypodia agesias, Hewitson, Cat. Lyc. B. M. p. 2, n. 49, pl. VI. figs. 55 and 56 (1862).

Sandakan (Pryer); Mt. Kina Balu; Kuching (Sar. Mus.); Pulo Laut.²

Distribution: Malacca and Sumatra.

- 419a. *Arhopala agesias ovomaculata*, Hew.

Amblypodia ovomaculata, Hewitson, Ill. Diurn. Lep. Suppl. p. 22, no. 103, pl. suppl. VIII. figs. 66 and 67 (1878).

1. "This is the variety a of *A. agesias*, (Hew.)"—Shelford *Journ. Ent. Br. Roy. As. Soc.* No. 35. p. 34. 1901.

2. Bethune-Baker gives Pulo Laut as a habitat for this species, but he describes this locality as "a small island off New Guinea" probably a mistake for the well known island of Pulo Laut off the South-East coast of Borneo.

Arhopala agesias var. *kinabala*, H. H. Druce, Proc. Zool. Soc. Lond. p. 592 (1895).

Mt. Kina Balu (Waterstradt); Labuan (Low); Mt. Kinabatangan, ulu Lawas, Mt. Matang (Sar. Mus.).

Apparently a mountain form of *agesias*.

Recorded from Battak Mountains, Sumatra.

420. *Arhopala avatha*, de Nicév.

Arhopala avatha, de Nicéville, Journ. Bomb. Nat. Hist. Soc. Vol. X. p. 174, n. 23, pl. T. fig. 34, ♂ (1896).

Sarawak. A single example determined by Mr. Bethune-Baker. Mr. Druce notes that it has slightly narrower borders. Previously recorded from Sumatra only.

421. *Arhopala moorei*, Bethune-Baker.

Arhopala moorei, Bethune-Baker, Proc. Zool. Soc. Lond. p. 669, pl. XXXI. fig. 1, ♂ (1896).

Mt. Kina Balu; Labuan; Santubong, Kuching and Quop (Mus.).

Distribution: Malacca and Sumatra.

A common species in Sarawak.

422. *Arhopala waterstradti*, Bethune-Baker.

Arhopala waterstradti, Bethune-Baker, *t. c.* p. 668, pl. XXX. figs. 10 and 11, ♂ and ♀.

Mt. Kina Balu (Mus. Staudinger); Lawas and Mt. Matang — 3,200 ft. (Sar. Mus.).

Confined to Borneo.

423. *Arhopala deva*, Bethune-Baker.

Arhopala deva, Bethune-Baker, *t. c.* p. 669, pl. XXXI. fig. 3.

N. Borneo (Cator); Kuching (Sar. Mus.).

Confined to Borneo.

Bethune-Baker is inclined to think that this species replaces *antimuta*, Felder, in North Borneo. In Sarawak both species occur, but *antimuta* more rarely.

424. *Arhopala antimuta*, Felder.

Arhopala antimuta, Felder, Reise Novara, Lep. Vol. II. p. 233, n. 26 (1865).

Arhopala davisonii, de Nicéville, Butt. Ind. Vol. III. p. 280, frontispiece, fig. 135, ♂ (1890).

Sandakan (Pryer); Labuan (Low); Kuching (Sar. Mus.).

Distribution: Malaya.

425. *Arhopala hypomuta*, Hew.
Amblypodia hypomuta, Hewitson, Cat. Lyc. B. M. p. 11,
 pl. VI. figs. 63 and 64, ♂ (1862).
 Kuching (Sar. Mus.).
Distribution: India and Malay Peninsula.
 Very common in Sarawak in the neighbourhood of Kuching.
426. *Arhopala metamuta*, Hew.
Amblypodia metamuta, Hewitson, Ill. Diurn. Lep. Lyc. p.
 13, n. 59, pl. II. figs. 14 and 15, ♂ (1863).
 Simanggang and Kuching (Sar. Mus.).
Distribution: Malaya—Mergui and Tenasserim to Sumatra
 and Billiton.
 Previously unrecorded from Borneo. Three of the four
 examples in the Sarawak Museum (taken 1894 and 1896) differ
 from Distant's figure in *Rhopalocera Malayana* (Pl. XXIII.
 fig. 19) in having a dislocated transverse band on the under-
 side of fore-wing; but the fourth example, taken near Kuching
 in August 1911, is normal in this respect.
Injury. ♂, large triangular bite out of hind-margin of
 right hind-wing, reaching as far as the cell and removing rather
 more than half the wing.
427. *Arhopala alaconia*, Hew.
Amblypodia alaconia, Hewitson, *op. cit.* p. 14, pl. III.
 figs. 52 and 53 (1869).
 Labuan (Low).
 Confined to Borneo.
428. *Arhopala sarawaca*, n. sp.

MALE. *Upperside*. Lustrous blue-purple with narrow even
 fuscous hind-marginal borders, a little broader at apex of fore-
 wing, more so across apex of hind-wing; costal margin of fore-
 wing very narrowly fuscous, of hind-wing more than twice as
 broad; inner-marginal fold of hind-wing grey fuscous, a thin
 indistinct white line bordering the anal angle; dark fuscous
 tail white-tipped. *Underside*. Brown with an iridescent lilac
 tinge, particularly noticeable in the hind-wing. The white
 edging to the spots well pronounced; general appearance of
 the underside like *A. ariel*, Doherty, but the individual mark-
 ings quite different. *Fore-wing*: three cell spots well defined
 and in increasing sizes; below the 2nd and 3rd are two irre-
 gular half-formed spots; above the second and slightly interior
 another small spot; small minute white spots above the third
 cell spot suggesting an irregular continuation of that spot to
 the costa; a well-defined transverse band of 6 spots: the 1st
 very small, 2nd, 3rd and 4th fused and sloping outwards, the
 5th and 6th shifted well in and sloping outwards; hind-

marginal border composed of a row of lunular spots succeeded exteriorly by an anteciliary white line; inner marginal region pale brown-fuscous. *Hind-wing*: a large costal-basal spot; four large basal spots, the third and fourth shifted outwards, the first three connected; a discal row of three large conterminous spots, the costal spot being fused with the first of a post-discal transverse row; a large spot closing cell and almost touching the 3rd and 4th spots of the post-discal row; a small half-formed spot immediately below it; the first four spots of the transverse row are placed *en échelon* outwards, the fifth shifted well in, the sixth out, the seventh or anal spot, long and irregular, reaching inner margin. Hind-marginal row of spots as in fore-wing but rather larger and the three anal spots are touched inwardly with blue iridescent scales; white anteciliary line as in fore-wing. Cilia grey-fuscous.

FEMALE. *Upperside*. Violet-purple, with dark narrow margin to costa of fore-wing broadening across apex and continuing broadly along hind-margin to inner margin; in hind-wing the base and discal region violet-purple surrounded by broad fuscous borders. A short tail, brown-fuscous, white-tipped. Underside colour and markings as in male, except for the addition of a seventh spot, small and indistinct, in the post-discal transverse band of the fore-wing.

Exp. al. ♂ 33 mm., ♀ 28 mm.

Types. *Male*: near Kuching, Sarawak, June 1911. *Female*: Sarawak, 1910 (Sar. Mus.) examined by Messrs. Druce and Bethune-Baker, who report the species as unknown to them.

In addition to the Types there are two females in the Sarawak Museum, captured near Kuching in 1900 and 1910, and a male from the ulu Madihit (head waters of the Limbang River), Sarawak, May 1911.

429. *Arhopala eumolphus*, Cr.

Papilio eumolphus, Cramer, Pap. Exot. Vol. IV. p. 19, pl. CCXCIX. figs. G, H, ♂ (1780).

Amblypodia bupola, Hewitson, Ill. Diurn. Lep. Suppl. p. 21, n. 102, pl. (suppl.) VII. figs: 64 and 65, ♀ (1878).

Narathura farquhari, Distant, Rhop. Malay. p. 264, n. 5, pl. XXIII. fig. 3, ♂ (1885).

Arhopala hellenore, Doherty, Journ. Asiat. Soc. Beng. Vol. LVIII. pt. 2, p. 422, n. 18, pl. XXIII. fig. 7, ♂ (1889).

Narathura maxwelli, Distant, Rhop. Malay. p. 263, n. 4, pl. XXIII. fig. 10, ♀ (1885).

Mt. Kina Balu (Waterstradt); Limbang and Kuching (Sar. Mus.); S. E. Borneo.

Distribution: India and Malaya to Philippines and New Guinea.

The males in the Sarawak Museum present a good deal of variation in the underside markings; the spots in the majority are rather larger than in the specimens figured by Bethune-Baker.¹ In one example the spots are so large that the transverse band of the fore-wing is partly fused with the third cell-spot and the spot beneath, suggestive of *staudingeri*, Semper. The hind-wing however does not show the same fusion of spots. Bethune-Baker's figures of the male *eumolphus* do not show the costal-basal spot which is present in the hind-wing of all the Sarawak males.

The males are fairly common in the neighbourhood of Kuching. Four females have been examined by Mr. Druce, who suggests that they represent the *farquhari* form of this species.

Injuries. (i) ♂, a ragged bite cutting out tail portion of right hind-wing. (ii) ♂, a square piece from apex of left fore-wing removed. (iii) ♂, a large tearing bite removing the whole of the anal angle of right hind-wing, but leaving a central strip in a similarly outlined gap in the left hind-wing. (iv) ♀, a small quadrate piece removed from hind-margin of right fore-wing.

430. *Arhopala aurea*, Hew.

Amblypodia aurea, Hewitson, Cat. Lyc. B. M. p. 8, pl. VIII, figs. 87 and 88 (1862).

Labuan (Low); Sarawak (Hewitson); Tameang-Lajang. Also recorded from Sapagaya.

A rare species, of which the female is unknown at present.

431. *Arhopala borneensis*, Bethune-Baker.

Arhopala borneensis, Bethune-Baker, Proc. Zool. Soc. Lond. p. 666, pl. XXX, fig. 5, ♂ (1896).

Mt. Kina Balu, Mt. Santubong—2,600 ft. (Sar. Mus.); Tameang-Lajang.

Also recorded from Malacca.

A rare species, of which the female is unknown at present.

432. *Arhopala tembaga*, n. sp.

MALE. *Upperside.* Brass-green, with hind-marginal borders of black, very narrow in the fore-wing, very heavy in the hind-wing. *Fore-wing:* the costa edged with black, narrow hind-marginal border tapering from anal angle to apex. *Hind-wing:* base and discal region brass-green, extending just above the sub-costal nervure and below the median, thus leaving dark broad costal and inner margins, and a broad hind-margin covering the outer two-fifths of the wing. Short black tail white-tipped. Long dark fuscous hairs along the inner margin.

1. Bethune-Baker (*l.c.*) describes a male under the female sign; doubtless a printer's error.

Underside. Dark grey fuscous. *Fore-wing:* first discal spot indistinct, 2nd elongate right across cell, third large. The transverse band unbroken but angled at the 4th spot as in *basiviridis*, de Nicév., the 5th spot being shifted well in, the 6th slightly out again and the 7th immediately beneath almost obsolete and enclosed in a light grey patch which reaches from the outer half of inner margin to 1st median nervule. A distinct sub-marginal row of spots the upper three of which are slightly shifted inwards. *Hind-wing:* indistinct costal-basal spot, regular basal row composed of four well-formed spots; median row of three spots, the two first well-defined, the third large and irregular; a transverse band of two confluent spots below the costa, followed by one elongate and slightly shifted in closing to the end of cell, this last succeeded outwardly by a smaller elongate spot, which is the first of an irregular series of confluent spots continuing the band to the inner margin; a rough sub-marginal row ending at anal angle in bright blue iridescent scales outwardly touched with black. Cilia fuscous.

FEMALE. Upperside. Purple, heavily margined with dark fuscous. *Fore-wing:* the dark costal margin extends along the sub-costal nervule, partially closes the cell and stretching across the radials and 3rd median nervule, leaves a broad fuscous apical region and an even margin 4-5 mm. wide from 2nd median nervule to inner margin. *Hind-wing:* margined as in male except that the purple disc (brass-green in male) extends rather more towards the hind-margin; tail twice as long as in male. *Underside.* Bronze-fuscous. Markings as in male, except that the discal spots of the fore-wing are rather heavier.

Exp. al. ♂ 41 mm., ♀ 47 mm.

Types, ♂ and ♀. Kuching (Sar. Mus.).

Messrs. Druce and Bethune-Baker who kindly examined this species for me, reported it as unknown to them. The underside is like that of *basiviridis*, but the totally different upperside of the male at once distinguishes it from that species.

433. *Arhopala basiviridis*, de Nicév.

Arhopala basiviridis, de Nicéville, Journ. Bomb. Nat. Hist. Soc. p. 373, pl. G, fig. 22, ♂ (1891).

Arhopala horsfieldi, H. H. Druce, Proc. Zool. Soc. Lond. p. 591 (1895).

Borneo (Doherty); Santubong and Kuching (Sar. Mus.).

Distribution: Burma, Malacca, Sumatra and Java.

All the Sarawak males before me have the costal basal spot in the hind-wing, which is not shown in Bethune-Baker's figure of the species. One specimen has the 5th spot of the fore-wing transverse band less shifted in than in the typical form, so that the spots form an arched, but continuous, band;

the other wing of the *same* specimen shows this even better, thus indicating that too much reliance should not be placed on so variable a character as this transverse band.

Injury. ♂, large piece removed from hind-margin of right hind-wing, just missing the tail.

434. *Arhopala abseus*, Hew.

Amblypodia abseus, Hewitson, Cat. Lyc. B. M. p. 9, n. 40 (1862).

Arhopala ampea, Felder, Reise Novara, Lep. p. 234, tab. XXIX, fig. 19 (1865).

Labuan (Low); Kuching (Sar. Mus.).

Distribution: India to Malaya; Philippines.

A common species in the neighbourhood of Kuching, Sarawak.

Bethune-Baker notices that Bornean males are "quite glossy purple" (*l. c.*).

435. *Arhopala diardi*, Hew.

Amblypodia diardi, Hewitson, Cat. Lyc. B. M. p. 9, n. 43, (1862).

Amblypodia capeta, Hewitson, Ill. Diurn. Lep. Suppl. p. 22, pl. VIII, figs. 70 and 71 (1878).

Amblypodia viardi, Staudinger, Iris, Vol. II, p. 130 (1889).

Labuan (Mus. Staudinger); Mt. Matang—3,200 ft., and Mt. Santubong—2,600 ft. (Sar. Mus.); S. E. Borneo (Ribbe).

Distribution: India, Assam, Malacca, Sumatra, Java and Philippines.

A good series in the Sarawak Museum shows a certain amount of variation in the two transverse bands of the forewing; in some they are of equal width, in others the outer is narrower; in some there is hardly any ground-colour left between, while in others a strip of ground-colour remains about equal in width to one of the transverse bands.

436. *Arhopala fulgida*, Hew.

Amblypodia fulgida, Hewitson, Ill. Diurn. Lep. Lyc. p. 11, n. 49, pl. V, fig. 31, ♀ (1863).

Panchala singapura, Distant, Rhop. Malay. p. 273, fig. 84 (1885).

A single female captured on Mt. Matang at an altitude of 2000 ft. constitutes the first record of this species for Borneo (Sar. Mus.).

Distribution: North India and Philippines to Malay Peninsula, Billiton and Sumatra.

The underside of the Sarawak example differs from Distant's figure in having but two fulgent spots at the anal angle instead

of four (the two central ones are absent); in this feature it agrees with the Sarawak examples of *diardi*, but the characteristic unbroken sub-basal band identifies it at once as *fulgida*.

437. *Arhopala anniella*, Hew.

Amblypodia anniella, Hewitson, Cat. Lyc. B. M. p. 10, pl. VIII, figs. 83 and 84, ♂ (1862).

Mt. Kina Balu (Waterstradt); Labuan (Low); Kuching (Sar. Mus.).

Distribution: Malaya—Tenasserim to Sumatra, Java and Philippines.

The female is fairly common in Sarawak, but the male is more rare, or perhaps harder to catch.

438. *Arhopala apidanus*, Cramer.

Papilio apidanus, Cramer, Pap. Exot. Vol. II. pl. CXXXVII, figs. F. and G, ♂ (1777).

Papilio dorimond, Stoll, Suppl. Cramer, pl. XXXVII, figs. 4, 4a, ♀ (1790).

Flos ahamus, Doherty, Journ. Asiat. Soc. Beng. Vol. LX. pt. 2, p. 33, pl. I. fig. 6, ♀ (1891).

Lawas (Everett); Labuan (Low); Bintulu and Kuching (Sar. Mus.).

Distribution: Malaya.

The series in the Sarawak Museum is particularly uniform although the specimens were taken in different localities and in different months; all the females are pale purple.

Snellen describes var. *saturata* from Billiton (*Tijds. v. Ent.* XXXIII, p. 301).

439. *Arhopala morphina*, Dist.

Panchala morphina, Distant, Ann. Mag. Nat. Hist. ser. 5. Vol. XIV. p. 201 (1884).

Silam, British North Borneo (Cator); Labuan (Staudinger); near Kuching (Sar. Mus.).

Distribution: Malacca and Sumatra.

A local species in Sarawak; eight examples in the Sarawak Museum, of which the two males were captured June 1910 and April 1911, while the six females were taken in December 1909, January (3), February and March 1911. They are uniform in markings and colour; the wonderful rich hue of the male upperside colouring makes this species one of the most beautiful *Arhopalas* to be found in Borneo,—Bethune-Baker thinks "about the most magnificent of the genus," but his figure of the male gives no idea of "the intense richness of the deep ultramarine blue" (*l. c.*). He remarks on the rarity of the species.

Injury.¹ ♀, large asymmetrical bite removing anal portion of both hind-wings.

[In comparison with the more or less uniform injuries noticed among the *Theclinae* it is interesting to reflect on the diverse nature of the injuries seen in the *Arhopalinae*, in which species all parts of the wings have been attacked both in flight and at rest; this no doubt is due to the absence of any very prominent markings directing attention to a non-vital part. The majority of the injuries are in one side only, suggesting that they are principally attacked when in flight, thus showing that their protectively coloured undersides have a real value and stand them in good stead.²]

440. *Arhopala bazalus*, Hew.

Amblypodia bazalus, Hewitson, Cat. Lyc. B. M. p. 8, n. 38, pl. IV. figs. 37 and 38, ♀ (1862).

Satadra testa, de Nicéville, Journ. Asiat. Soc. Beng. Vol. LV. pt. 2, p. 253, n. 6, pl. XI. fig. 3, ♂ (1886).

S. E. Borneo (Bethune-Baker).

Distribution: Indo-Malaya and Japan.

441. *Arhopala bella*, Bethune-Baker.

Arhopala bella, Bethune-Baker, Proc. Zool. Soc. Lond. p. 664, pl. XXX. figs. 6 and 7 (1896).

Mt. Kina Balu only.

442. *Arhopala azinis*, de Nicév.

Arhopala azinis, de Nicéville, Journ. Bomb. Nat. Hist. Soc. p. 3, pl. T. fig. 31 (1895).

Arhopala kounga, Bethune-Baker, Proc. Zool. Soc. Lond. p. 662, pl. XXX. fig. 4, ♀ (*nec* fig. 3, ♂) (1896).

Mt. Kina Balu (Bethune-Baker).

Also recorded from N. E. Sumatra.

443. *Arhopala oenotria*, Hew.

Amblypodia oenotria, Hewitson, Ill. Diurn. Lep. Lyc. p. 14 a, pl. III c, fig. 56 (1865).

Kuching and Bau (Sar. Mus.).

Also recorded from Nias Island and Philippine Islands.

444. *Arhopala agnis*, Feld.

Arhopala agnis, Felder, Reise Novara, Lep. Vol. II. p. 228 (1865).

1. See Distant, *Rhop. Malay*, p. 273, fig. 85, 6, "showing mutilation effected by the attack of a bird" (*A. apidanus*.)

2. "...and as they (*Arhopalas*) always settle with folded wings, of which the undersides present only dull brown, grey, or dull purple colour, little is seen of them." (de Nicéville and Martin in *Journ. As. Soc. Bengal* Vol. LXIV. pt. ii. p. 470, quoted by Bethune-Baker in *Trans. Zool. Soc. Lond.* 1903. p. 27.)

Amblypodia anarte, Hewitson, Ill. Diurn. Lep. Lyc. p. 4, n. 8, pl. I. figs. 6, ♂, ♀ (1863).

Labuan (Low); Quop and Lundu (Sar. Mus.).

Distribution: Malaya—from Upper Tenasserim to Sumatra and Mindanao.

445. *Arhopala tameanga*, Bethune-Baker.

Arhopala tameanga, Bethune-Baker, Proc. Zool. Soc. Lond. p. 658, pl. XXIX. figs. 7 and 8 (1896).

Tameang-Lajang (S. E. Borneo).

446. *Arhopala semperi*, Bethune-Baker.

Arhopala semperi, Bethune-Baker, *t. c.* p. 659, pl. XXIX. figs. 9 and 10.

Mt. Kina Balu; Baram River; Tameang-Lajang.

Confined to Borneo.

447. *Arhopala barami*, Bethune-Baker.

Arhopala barami, Bethune-Baker, Trans. Zool. Soc. Lond. Vol. XVII. p. 126, pl. III. fig. 5 (1903).

Borneo.

Also recorded from Perak.

448. *Arhopala dajagaka*, Bethune-Baker.

Arhopala dajagaka, Bethune-Baker, Proc. Zool. Soc. Lond. p. 660, pl. XXIX. figs. 11 and 12 (1896).

Mt. Kina Balu; Labuan; Quap (Sar. Mus.); Tameang-Lajang.

Confined to Borneo.

The single Sarawak example (a male) measures 42 mm. across; Bethune-Baker gives the dimensions of male and female as 55-56 mm.

449. *Arhopala allata*, Staud.

Amblypodia allata, Staudinger, Iris, Vol. II. p. 125, Taf. IK fig. 1 (1889).

Labuan (Low).

Distribution: Palawan, Mindanao and Mindoro.

450. *Arhopala myrzala*, Hew.

Amblypodia myrzala, Hewitson, Ill. Diurn. Lep. Lyc. p. 140, pl. III b, figs. 41 and 42, ♂ (1865).

Kuching (Sar. Mus.). The first record of this species for Borneo.

Distribution: Mindanao, Philippine Islands.

Three examples in the Sarawak Museum, viz. two males taken in April 1896 and April 1911, and a female in July 1894.

451. *Arhopala shelfordi*, n. sp.

FEMALE. *Upperside*. Discal patch of bright violet-blue bordered very broadly with brown-fuscous. *Fore-wing*: costa well-arched; fuscous margin broad along the costa to first sub-costal nervule, thence diagonally across the wing, closing cell and leaving the apical half broad fuscous and hind-marginal border of same. *Hind-wing*: small violet patch covering the cell and very slightly extending above and beyond it; a dark line across the end of cell; rest of the wing dark brown-fuscous. No tails. *Underside*. Rich red-brown, clear spotted. *Fore-wing*: three regular increasing cell-spots, a small indistinct spot above and below the third cell-spot; a continuous transverse band slightly sinuous, composed of 6 spots; the 1st small and indistinct, forming with the next two a slight outward and convex curve, the 4th shifted outward, the 5th and 6th slightly out again. A faint hind-marginal row of lightly-edged spots; anal inner-marginal region extending to first median nervule, light brown. *Hind-wing*: a small and indistinct costal-basal spot; a sub-basal row of 4 well-defined spots, the third of which is shifted outwards; a median row of three larger spots; a long spot closing cell with small spot in the nervular angles immediately above and below; the transverse band composed of 7 well-defined spots; the 1st isolated, the next 5 continuous, of which the 2nd is large, the 3rd and 4th immediately below it and fused, the 5th and 6th fused and slightly shifted in, the 7th, or angular spot, long and stretching across to the inner margin. A continuous hind-marginal row of spots as in fore-wing; three dark spots at anal angle relieved inwardly with light iridescent blue, the outward spot separated from the other two. Cilia brown fuscous.

Exp. al. ♀ 40 mm.

Type. Female, near Kuching, Sarawak, January 17th 1910 (Sar. Mus.).

Three other examples from the same locality in the Sarawak Museum, and two (e coll. Sar. Mus.) in Mr. Druce's collection.

Examined by Messrs. Bethune-Baker and Druce, who pronounced the species as unknown to them.

452. *Arhopala rajah*, n. sp.

MALE. *Upperside*. Lustrous violet-purple broadly margined with glossy brown-fuscous. Rather narrow sub-acute forewings as in *A. buddha*, Bethune-Baker. *Fore-wing*: the discal region of lustrous purple is sharply defined by the fuscous border, which follows the sub-costal nervule, closes the cell and stretches across diagonally and rather irregularly, to form an even hind-marginal border 3 millim. in width and slightly diffuse along inner margin. A dark spot is noticeable at the end of cell. *Hind-wing*: long, bright purple discal patch, sharply defined as in fore-wing but more restricted in area,

extending from base through cell and beyond it, including the basal third of the 2nd and 3rd median nervules and bounded by the 1st median nervule. Rest of the hind-wing brown fuscous. A short stout tail at the end of 1st median nervule; hind-margin just above this tail suggestive of being scalloped.

Underside. Brown, glossed with a beautiful lilac sheen, particularly so in the hind-wing, with clear, large, decisive markings. *Fore-wing:* three increasing spots in cell; a large spot, outwardly light-edged, below junction of 1st median nervule; a second, similar but smaller, below junction of 2nd median nervule. A broad continuous band of six large fused spots, the first four sloping outwards slightly and increasing in size, the 5th shifted in, the 6th out; there are indistinct traces of 7th and 8th spots. A well-defined hind-marginal line of spots followed by a thin light anteciliary line; inner marginal region to 1st median nervule light fuscous-brown. *Hind-wing:* small costal-basal spot; sub-basal row of four spots, the 2nd and 3rd of which are contiguous; a median row of three larger spots; a long spot closing cell; a spot in angle just above the junction of 1st median nervule and touching the 3rd sub-basal spot. Much interrupted transverse row of 7 large spots; the 1st and 2nd large and fused, 3rd and 4th fused and shifted well out so that the inner corner of the 3rd only just touches the outer lower corner of the 2nd, and 5th smaller and shifted well in, the 6th shifted out, and the 7th, or angular spot, shifted in and prolonged to the inner margin. A hind-marginal row of continuous spots outwardly edged with lightish lunules; a thin light anteciliary line; at anal angle:— a large black spot, inwardly edged with light iridescent blue, between 1st and 2nd median nervules, succeeded inwardly by two fused spots at the angle, the first of which is light iridescent blue edged with black, the second black inwardly edged with iridescent blue. Tail dark fuscous white tipped; cilia dark fuscous, except for a few white scales at anal angle of hind-wing.

Exp. al. ♂ 37 mm.

Type ♂ (and only known specimen), Mt. Lingga, Sarawak, May 1909 (Sar. Mus.).

Messrs. Bethune-Baker and Druce, who kindly examined it, reported it as unknown to them, but allied to *A. buddha*, a Javan species. The shape of *A. rajah* is like this species, but the pale azure-blue of *buddha* together with the narrower margins at once provide sufficient distinctions between the two species. The underside markings are also different.

453. *Arhopala caeca*, Hew.

Amblypodia caeca, Hewitson, Ill. Diurn. Lep. Lyc. p. 14, pl. IV. fig. 28 (1865).

Sarawak (Hewitson).

Confined to Borneo.

Sub. Fam. VII. THECLINAE.

The Bornean *Theclinae* seem to fall naturally into five groups which may be characterized as follows:—

- | | |
|---|----------------------------|
| 1. Hind-wing with one short filamentous tail. | 1. <i>Chrysophanaria</i> . |
| 2. Hind-wing with two short filamentous tails, (the Indian genus, <i>Zesius</i> , belongs here, although the female is aberrant in having three tails). | 2. <i>Bicaudataria</i> . |
| 3. Hind-wing both sexes with two tails, one of which is half an inch in length or over. | 3. <i>Cheritriaria</i> . |
| 4. Hind-wing both sexes with three tails. | 4. <i>Horagaria</i> . |
| 5. Hind-wing with one tail of variable length; lobate at anal angle. | 5. <i>Loxuraria</i> . |

This classification is practically the same as that proposed by de Nicéville in his *Butterflies of India*. He divided the *Lycænidæ* into eleven groups of which the group *Thecla* is the sixth. This, he sub-divided into two sub-groups, the first containing six genera "which, as a rule, possess one short tail to the hind-wing from the termination of the first median nervule;" this sub-group I have called *Chrysophanaria*, since it contains the well-known genus, *Chrysophanus*, Hübner. The only Bornean representative of this sub-group (promoted to the rank of group here) is *Ilerda kiana*, Gr.-Smith. De Nicéville's second sub-group contained twelve genera "which all possess two short tails (under half an inch in length) to the hind-wing in both sexes, though one aberrant genus, *Zesius*, Hübner, from India has three tails in the female;" this sub-group (or group here) I call *Bicaudataria*.

The remaining three groups are almost the same as those of de Nicéville, except that I have merged his *Deudorix* group into the *Loxuraria* group.

Group 1. *CHRYSOPHANARIA*.

Genus, *ILERDA*, Doubleday.

454. *Ilerda kiana*, Grose-Smith.

Sithon kiana, Grose-Smith, Ann. Mag. Nat. Hist. ser. 6. Vol. III. p. 317 (1889).

Mt. Kina Balu (Everett, Hanitsch, Whitehead and Waterstradt); Mt. Marapok (Sar. Mus.—e coll. Druce).

Mr. Druce having carefully examined the neururation and antennae, finds it referable to the genus *Ilerda*. He remarks that "it has been received in some numbers from Kina Bilu."

Group 2. *BICAUDATARIA*.

Genus, *DACALANA*, Moore.

455. *Dacalana vidura*, Horsf.

Amblypodia vidura, Horsf., Cat. Lep. E.I.C. p. 113 (1829).

Sandakan (Pryer); Labuan (Low); Trusan (Everett); Lawas, Trusan, Tambak, Santubong, Matang, Kuching, Bau, Lundu (Sar. Mus.); Banjarmasin (Wahnes).

Distribution: India (?) and Malaya.

This genus is distinguished from *Arrhenothrix*, de Nicév. by the presence of an additional sub-costal nervule in the fore-wing.

A long series from Sarawak bears out Druce's note that in Bornean examples the white band of the hind-wing varies in width; and many of them are indistinguishable from *A. percelligera* in this respect.

Injury. ♂, small symmetrical bite removing the inner anal spot and tail in both hind-wings.

Genus, *ARRHENOTHRIX*, de Nicév.

456. *Arrhenothrix lowii*, H. H. Druce.

Arrhenothrix lowii, H. H. Druce, Proc. Zool. Soc. Lond. p. 596, pl. XXXIII. fig. 2 (1895).

Labuan (Low).

Described from a male—the only known specimen—in the collection of Messrs. Godman and Salvin.

Genus, *PRATAPA*, Moore.

457. *Pratapa lucidus*, H. H. Druce.

Pratapa lucidus, H. H. Druce, *t. c.* p. 596, pl. XXXIII. fig. 3 (1895).

Labuan (Low and Waterstradt); Kuching, Mt. Matang—3,200 ft. and Quop (Sar. Mus.).

Also recorded from Sumatra.

The Sarawak specimens differ from Druce's figure in being darker blue, and the prominent blue striae in the apex of fore-wing are hardly distinguishable in the Sarawak specimens.

Injury. ♂, long bite removing costal-apical portion of left fore-wing.

458. *Pratapa sannio*, H. H. Druce.

Pratapa sannio, H. H. Druce, *t. c.* p. 596, pl. XXXIII. fig. 15 (1895).

Sandakan (Pryer).

Confined to Borneo.

459. *Pratapa cremera*, de Nicév.

Pratapa cremera, de Nicéville, Journ. As. Soc. Beng. LXIII. pt. II. p. 37, pl. V. fig. 16, ♂ (1895).

Trusan (Sar. Mus.).

Previously recorded from Java only.

[There are four closely allied species: *P. cotys*, Hew. from India and Burma, *P. anysis*, Hew. from Celebes and the Philippines, *P. sannio*, H. H. Druce, from Sandakan, and the

above recorded from Java. I am inclined to consider all as mere topomorphs of *cotys*, but it is curious that both *cremera* and *sannio* should occur in Borneo]. R. S.

460. *Pratapa devana*, H. H. Druce.

Pratapa devana, H. H. Druce, Proc. Zool. Soc. Lond. p. 597, pl. XXXIII. figs. 4 and 5 (1895).

Mt. Kina Balu and Labuan¹ (Waterstradt); Mt. Matang and Santubong (Sar. Mus.).

Confined to Borneo, where it is evidently a mountain species.

461. *Pratapa calculis*, H. H. Druce.

Pratapa calculis, H. H. Druce, Proc. Zool. Soc. Lond. p. 598, pl. XXXIII. figs. 6 and 7 (1895).

Mt. Kina Balu (Waterstradt); Mt. Matang—3,200 ft. and Mt. Santubong—2,800 ft. (Sar. Mus.).

Confined to Borneo.

A good series in the Sarawak Museum presenting no variations.

Injury. ♂, large asymmetrical bite removing anal portion of both hind-wings.

Genus, *TAJURIA*, Moore.

462. *Tajuria jalindra*, Horsf.

Amblypodia jalindra, Horsfield, Cat. Lep. E. I. C. p. 109 (1829).

Labuan (Low and Waterstradt); Kuching (Sar. Mus.).

Distribution: Java, Sumatra and Nias.

Injury. ♂, deep bite removing tail of left hind-wing.

463. *Tajuria maculatus*, Hew.

Iolaus maculatus, Hewitson, Ill. Diurn. Lep. Lyc. p. 47, pl. XXI. figs. 29, 30 (1865).

Mt. Kina Balu (Waterstradt).

Distribution: Sikkim and Assam.

464. *Tajuria longinus*, Fab.

Hesperia longinus, Fabricius, Ent. Syst. Suppl. Vol. V. p. 430 (1798).

Sarawak (coll. Druce).

Distribution: India, Ceylon, Burma, Malacca, Sumatra and Java.

465. *Tajuria cyrus*, H. H. Druce.

Tajuria cyrus, H. H. Druce, Proc. Zool. Soc. Lond. p. 600, pl. XXXIII. figs. 10, 11 (1895).

1. It is important to remember that "Labuan" in connexion with Waterstradt's name does *not* mean the low-lying island off the north coast of Borneo, but the mainland opposite to Labuan which is for the most part hilly country. Druce quotes a note of Dr. Staudinger to this effect.

Mt. Kina Balu only (Waterstradt).

"Allied to *T. mantra*, Felder, but larger" (Druce, *l. c.*).

466. *Tajuria mantra*, Feld.

Pseudolycaena mantra, Felder, Wien. Ent. Monatsch. Vol. IV. p. 396, n. 9 (1860).

Mt. Kina Balu (Waterstradt); Labuan (Low); Mt. Santubong—2,600 ft. (Sar. Mus.).

Druce says it is a common insect in Borneo; collecting in Sarawak however does not bear this out.

Distribution: Burma, Malacca, Sumatra and Celebes.

467. *Tajuria isaeus*, Hew.

Iolais isaeus, Hewitson, Ill. Diurn. Lep.: Lyc. p. 44, pl. XIX. figs. 13, 14 (1865).

Tajuria relata, Dist, Rhop. Malay. p. 246, pl. XXI. fig. 12, ♀ (1884).

Sarawak (Hewitson); common near Kuching (Sar. Mus.).

De Nicéville suggests that the *T. isaeus*, Hew. recorded by Grose-Smith and Kirby from Sumatra should be referred to *Britomartis cleoboides*, Elwes.

468. *Tajuria dominus*, H. H. Druce.

Tajuria dominus, H. H. Druce, Proc. Zool. Soc. Lond. p. 600, pl. XXXIII. fig. 12, ♂ (1895).

Mt. Kina Balu (Waterstradt).

469. *Tajuria tussis*, H. H. Druce.

Tajuria tussis, H. H. Druce, *t. c.* p. 601, pl. XXXIII. figs. 8, 9 (1895).

Labuan (Waterstradt); Trusan and Kuching (Sar. Mus.).

470. *Tajuria cato*, H. H. Druce.

Tajuria cato, H. H. Druce, *t. c.* p. 601, pl. XXXIII. figs. 13, 14 (1895).

Mt. Kina Balu (Waterstradt) only.

471. *Tajuria lucullus*, H. H. Druce.

Tajuria lucullus, H. H. Druce, Ann. Mag. Nat. Hist. (7) Vol. 13, p. 141 (1904).

Mt. Kina Balu only (coll. Druce).

Closely allied to *T. cato*.

472. *Tajuria blanka*, de Nicév.

Tajuria blanka, de Nicéville, Journ. As. Soc. Beng. Vol. LXIII. p. 39, pl. IV. fig. 4 (1894).

Mt. Kina Balu (Waterstradt).

Also recorded from the Battak Mountains, Sumatra.

Druce records a fine female received from Dr. Staudinger, which, he says agrees well with de Nicéville's figure and description except that the thorax is white instead of drab.

473. *Tajuria berenis*, H. H. Druce.
Tajuria berenis, H. H. Druce, Proc. Zool. Soc. Lond. p. 674, pl. XXXI. fig. 6 (1896).
 Mt. Kina Balu only (Waterstradt).
474. *Tajuria sunia*, sp. n. (Fig. 7).
Upperside. Bright pale blue, almost the same shade as in *T. tussis*. *Fore-wing*: costal margin and apex black fuscous as in *T. berenis*, Druce. *Hind-wing*: a narrow costal margin of fuscous broadening slightly at apex as in *tussis*. Inner margin whitish grey. A thin dark anteciliary line. Two short tails bordered and tipped with white. Cilia fuscous. At anal angle a touch of orange succeeded outwardly by a small black spot and then a small white spot.
Underside. Grey as in *tussis*. *Fore-wing*: a very faint post-discal lunular line of which all but the lunules above 1st and 2nd median nervules is almost obsolete: a sub-marginal line tapering from anal angle and finally disappearing between the discocellulars. *Hind-wing*: post-discal line and anal markings as in *tussis*, except that the orange yellow is slightly more extensive and the sub-marginal border of the upper wing is continued on the hind-wing as far as the orange anal patch. Cilia grey.
Exp. al. 39 mm.
Type (and only known specimen) from Mt. Penrissen, 3,500 ft., Sarawak (Sar. Mus.).
 Allied to *T. berenis*, Druce, from which it differs in the markings of the underside, notably in the development of a rather larger anal patch of orange.
475. *Tajuria donatana*, de Nicév.
Tajuria donatana, de Nicéville, Journ. As. Soc. Beng. Vol. LVII. pt. 2, p. 287, n. 18, pl. XIV. fig. 15 (1888).
 Labuan (Low); Mt. Santubong and Mt. Matang (Sar. Mus.).
Distribution: Upper Tenasserim and Sumatra.
 Fairly common in Sarawak. Differs from de Nicéville's description in the thin white line, which borders anal spots on underside of hind-wing, being interrupted. The black spot in first median interspace is somewhat larger than in de Nicéville's figure, as noticed by Druce in a single male in the Godman-Salvin collection.
Injuries. (i) wide symmetrical bite removing hind-margin of hind-wings and lower half of same in fore-wings. (ii) small piece from anal angle of right hind-wing.
476. *Tajuria travana*, Hew.
Myrina travana, Hewitson, Ill. Diurn. Lep. Lyc. p. 38, pl. XVII. figs. 59, 60 (1865).

Sandakan (Pryer); Mt. Kina Balu (Waterstradt); Labuan (Low); Madihit, Mt. Matang and Kuching (Sar. Mus.).

Very common on the sunlit edges of old jungle adjoining some paddy farms in the Madihit hills.

Also recorded from Malacca, Singapore and Sumatra.

Injuries. (i) large bite from hind-margin of right fore-wing. (ii) large bite removing anal angle of left hind-wing.

Genus, *BULLIS*, de Nicéville.

477. *Bullis buto*, de Nicéville.

Britomartis buto, de Nicéville, Journ. Bomb. Nat. Hist. Soc. Vol. IX. p. 308, pl. P. fig. 41, ♀ (1895).

Limbang and Kuching (Sar. Mus.).

Distribution: Burma and Sumatra.

Common in the neighbourhood of Kuching. Rests with anal lobes everted and outer tails erect, giving the impression of a butterfly's head and antennae. I have noticed the same in *Lehera anna* males, in several species of *Arhopala*, *Deudorix* and *Rapala*.¹

Genus, *BRITOMARTIS*, de Nicéville.

478. *Britomartis cleoboides*, Elwes.

Tajuria cleoboides, Elwes, Proc. Zool. Soc. Lond. p. 637, pl. XLIV. figs. 4, 5 (1892).

Borneo.²

Distribution: Burma, Sumatra and Java.

479. *Britomartis stigmata*, H. H. Druce.

Tajuria stigmata, H. H. Druce, Ann. Mag. Nat. Hist. (7). Vol. 13, p. 141 (1904).

Simanggang (Sar. Mus.).

This species has only two sub-costal nervules in fore-wing and should therefore be referred to the genus *Britomartis* instead of *Tajuria*.

In a letter (May, 1904), Mr. Druce recognized this.

Genus, *THAMALA*, Moore.

480. *Thamala marciana*, Hew.

Myrina marciana, Hewitson, Ill. Diurn. Lep. Lyc. p. 34, pl. XVI. fig. 44, ♂. pl. XII. figs. 12, 13, ♀ (1863).

1. For notes on this habit among *Lycaenidae*, see Longstaff, *Trans. Ent. Soc. Lond.* 1908, pp. 656, 657, also Poulton, *Essays on Evolution* 1908, p. 281.

2. de Nicéville identified one of Hewitson's figures of *T. isaeus* as this species and he gives the distribution noted above.

Borneo (Butler); Sarawak (Hewitson); S. E. Borneo (Doherty).¹

Distribution: Malacca and Sumatra.

Genus, *HYPOLYCAENA*, Felder.

481. *Hypolycaena erylus*, Godt.

Polyommatus erylus, Godart, Enc. Méth. Vol. IX. p. 633, n. 60 (1823).

Hypolycaena erylus, Snellen, Tijd. voor. Ent. Vol. XXI p. 23, n. 95 (1878).

Hypolycaena andamana, Moore, Proc. Zool. Soc. Lond. p. 589 (1877).

Trusan, N. Borneo (Everett); Labuan (Low and Waterstradt); Limbang, Samarahan, Quop, Satap, Kuching and Mt. Matang (Sar. Mus.).

Distribution: Sumatra.

Two shades of colour are noticeable in the Sarawak specimens.

482. *Hypolycaena thecloides*, Feld.

Myrina thecloides, Felder, Wien. Ent. Monatsch. Vol. IV. p. 395 (1860).

Labuan (Low and Waterstradt); North Borneo, Lawas, Marapok Mtns., Trusan, Lobang, Santubong, Buntal and Kuching (Sar. Mus.).

Distribution: Sumatra.

Genus, *CHLIARIA*, Moore.

483. *Chliaria skapane*, H. H. Druce.

Hypolycaena skapane, H. H. Druce, Proc. Zool. Soc. Lond. p. 604, pl. XXXIII, figs. 16 ♂ and 17 ♀ (1895).

Mt. Kina Balu (Waterstradt).

Confined to Borneo.

Druce (*op. cit.* p. 675, 1896) refers this species and the next to the genus *Chliaria*.

484. *Chliaria phemis*, H. H. Druce.

Hypolycaena phemis, H. H. Druce, *op. cit.* p. 604, pl. XXXIII, fig. 18 ♂ (1895).

Mt. Kina Balu (Waterstradt); near Batu Lawi and Matang (Sar. Mus.).

A rare species; four examples in the Sarawak Museum: a female captured March 1898, a male in December 1909, and two more males in the mountainous region near Batu Lawi,

1. de Niceville (*Butt. Ind.*, Vol. III. p. 388) records a specimen of *T. miniata* Moore, from S. E. Borneo which exactly agrees with the figure and description of *marciana*, Hew; and he considers the two species identical. The distribution of *miniata* is given as Upper Tenasserim, Burma and Mergui.

May 1911. These last have the outer anal spot rather larger than that figured by Druce.

Confined to Borneo.

485. *Chliaria mimima*, H. H. Druce.

Chliaria mimima, H. H. Druce, *t. c.* p. 605, pl. XXXIV. fig. 1, ♂ (1895).

Mt. Kina Balu and Labuan (Waterstradt); Mt. Matang—3,200 ft., and Kuching (Sar. Mus.).

Mr. Druce kindly identified a pair in the Sarawak Museum for me. He says (*in litt.*) that *mimima* may prove to be a form of *C. tora*, Kheil,—a Nias Island and Sumatra species; he notes that the blue is much paler and whiter on the hind-wing and less extensive on the forewing than in Kheil's species.

486. *Chliaria balua*, n. sp. (Fig. 6).

Upperside. Fore-wing: chestnut brown with fuscous costal, hind-marginal and inner marginal borders; the hind-marginal border rather broader at apex and anal angle; the inner marginal border narrow. *Hind-wing:* discal patch of iridescent purple; broad costal margin, basal region and hind-margin very narrowly fuscous; inner margin white, slightly suffused with fuscous. A dark anteciliary line bordered inwardly (from 2nd median nervule to sub-median nervule only) by thin white line. Two short tails. Cilia fuscous.

Underside. Fore-wing: basal region pearly grey darkened outwardly to hind-margin with light russet brown. Cell closed by faint double line; post-discal line as in *C. phemis*, but broken at 3rd median nervule. A faint sub-marginal grey line. *Hind-wing:* pearly grey. A prominent, very dark brown spot between costal nervule and 1st sub-costal nervule about $\frac{2}{3}$ from base; below it a thin disjointed orange line sloping outwards slightly to meet a thin dark line bordering the hind-margin and enclosing a broad anal region of yellow. A large rounded dark spot between 1st and 2nd median nervules, succeeded above by small indistinct fuscous internervular spots; anal angle black relieved with few light blue iridescent scales. Yellow region of anal angle relieved outwardly by thin whitish line and black anteciliary line.

Exp. al. 28 mm.

Type. (and only known specimen) from Kuching, Sarawak (Sar. Mus.).

The coloration of the upper side is entirely different to any Bornean species of this genus.

Mr. Druce kindly examined this specimen, reporting it as unknown to him.

Genus, *SUSA*, de Nicév.487. *Susa iris*, Staud.

Sithon iris, Staudinger, Iris, ii. p. 110, pl. I. fig. 10, ♂ (1889).

Mt. Kina Balu (Waterstradt); Kuching (Sar. Mus.).

Druce notices that "Bornean specimens have the apex and outer margin of the fore-wing below a much duller shade of yellow than the type from Palawan."

Genus, *APHNAEUS*, Hübn.488. *Aphnaeus syama*, Horsf.

Amblypodia syama, Horsfield, Cat. Lep. E. I. C. p. 107 (1829).

Aphnaeus peguanus, Moore, Journ. As. Soc. Beng. Vol. LIII. Pt. 2, p. 26 (1884).

Aphnaeus orissanus, Moore, l. c. p. 27.

Aphnaeus frigidus, Druce, Proc. Zool. Soc. Lond. p. 350, pl. XXXII. fig. 10 (1873).

Labuan (Low and Waterstradt); Lawas, Baram, and Mt. Lingga (Sar. Mus.).

Distribution: Sikkin, Assam, Burma, Malay Peninsula, Java, Sumatra and Philippines.

Injury. ♀, anal angle of right hind-wing removed.

489. *Aphnaeus lohita*, Horsf.

Amblypodia lohita, Horsfield, Cat. Lep. E. I. C. p. 106 (1829).

Mt. Kina Balu and Labuan (Waterstradt); Baram, Bintulu, Mt. Matang and Kuching (Sar. Mus.).

Distribution: India, Ceylon, Philippines, China and Malaya.

490. *Aphnaeus vixinga*, Hew.

Aphnaeus vixinga, Hewitson, Ent. Mo. Mag. XII. p. 39 (1875).

Borneo (Low).

Not recorded from elsewhere.

Group 3. *CHERITRARIA*.¹

The eleven Bornean genera comprising this group may be conveniently summarized as follows:—

A¹ Inner tail from end of sub-median nervure the longer.

B¹ Both sexes, fore-wing with two sub-costal nervules. Male without secondary sexual characters.

1. *Zeltus*.

1. This group corresponds to the *Myrina Group* of de Nicéville. In a footnote however, that author noted that *Cherita* would have been a much better name, as *Myrina silenus* really belonged to his ninth division, the *Loxura Group*. I have therefore adopted his suggestion.

- B² Both sexes, fore-wing with three sub-costal nervules, (except the genus *Thrix*, which has four).
- C¹ Male with secondary sexual character on
- D¹ inner margin of hind-wing and long hairs along inner margin of fore-wing 2. *Purlisa*.
 - D² costa of hind-wing. 3. *Manto*.
 - D³ underside of inner margin of fore-wing. 4. *Mantoides*.
 - D⁴ sub-median nervure of fore-wing. 5. *Virgarina*.
 - D⁵ below sub-median nervure of fore-wing. 6. *Thrix*.
- C² Male without secondary sexual character. 7. *Charana*.
- B³ Three sub-costal nervules in fore-wing of female only.
- E¹ Male with two sub-costal nervules; no secondary sexual characters. 8. *Jacoona*.¹
 - E² Male with four sub-costal nervules; tuft of hair on underside of inner margin of fore-wing. 9. *Neocheritra*.
- A² Outer tail from end of first median nervule the longer. Both sexes with three sub-costal nervules.
- F¹ Hind-wing of male with small tuft of hairs at base of costal interspace. 10. *Cheritra*.
 - F² Fore-wing of male with glandular patch of scales in centre. 11. *Ritra*.

Genus, ZELTUS, de Nicév.

491. *Zeltus etolus*, Fab.

Papilio etolus, Fabricius, Mant. Ins. Vol. II. p. 66, n. 620 (1787).

Hypolycaena amasa, Hewitson, Ill. Diurn. Lep. p. 51, n. 8 (1865).

Mt. Kina Balu (Waterstradt); Labuan (Low); Marapok Mts., Banting, Santubong, Mt. Matang, Quop and Kuching (Sar. Mus.); S. W. Borneo (Ind. Mus.).

Distribution: India and Malaya.

1. Distant in describing this genus states that it has four sub-costal nervules; but Druce in *Proc. Zool. Soc. Lond.* p. 679 (1896) pointed out that the male has but two and the female three.

Taken all the year round in Sarawak; only one female in a series of twenty specimens in the Sarawak Museum. The undersides vary a good deal in the intensity of the brown colouring and the transverse line in most of the examples before me is much straighter than in the Indian example figured by de Nicéville in *Butterflies of India*.

Injury. ♂, small asymmetrical bite removing the two inner tails and part of the anal angle of right hind-wing.

Genus, PURLISA, Distant.

492. *Purlisa gigantea*, Distant. (Fig. 4, ♂).¹

Iolaus (Purlisa) giganteus, Distant, Ent. Mo. Mag. Vol. XVII. p. 245 (1881).

id Rhop. Malay. p. 250, pl. XXI. fig. 28, ♀ (1885).

Purlisa giganteus, Shelford, Journ. Roy. As. Soc. Str. Br. No. 33, p. 257, ♂ (1900).

Sarawak (coll. Druce); Mt. Matang—3,200 ft. (Sar. Mus.). Also recorded from Penang.

Evidently a rare species. Distant records a single specimen from Penang and one unlocalised example in the collection of Mr. F. Moore. Druce records a single female from Sarawak; and there is a pair in the Sarawak Museum, taken in March 1898 and April 1902 on the summit of Mt. Matang. In regard to the position of this genus, Distant placed it between *Cheritra* and *Neomyrina*; de Nicéville referred it to his *Thecla Group*, placing it next to *Tajuria*. Druce suggested it was more likely to be related to *Cheritra*, and the discovery of the male with secondary sexual characters helps to bear this out. De Nicéville judged from Distant's figure that the tails were not long enough for inclusion in his *Myrina Group*, hence his reason for reference to the *Thecla Group*.

However the inner tails of the Sarawak examples reach the required half-inch, so I include it now in the *Myrina (Cheritria, mihi)* Group.

Genus, MANTO, de Nicév.

493. *Manto martina*, Hew.

Myrina martina, Hewitson, Ill. Diurn. Lep. Lyc. Suppl. p. 3, t. 2, figs. 70, 71 (1869).

1. While for the general appearance of this species the figure is good, no attention should be paid to the neuration depicted, as it unfortunately suffers from the over-zealous attentions of the reproducer.

Mt. Kina Balu (Waterstradt); Kiou¹ (Hanitsch); Labuan (Low and Waterstradt); Limbang, Matang, Kuching and Pangga (Sar. Mus.); South Borneo (Ind. Mus.).

Distribution: Burma, Malay Peninsula and Sumatra.

Genus, MANTOIDES, H. H. Druce.

494. *Mantoides licinius*, H. H. Druce.

Mantoides licinius, H. H. Druce, Proc. Zool. Soc. Lond. p. 677, pl. XXXI. figs. 10 ♂, 11 ♀ (1896).

Mt. Kina Balu (Waterstradt and Everett); Mt. Santubong and Mt. Matang (Sar. Mus.).

Only recorded from Borneo.

The single female in the Sarawak Museum has the dark anal markings of the hind-wing somewhat heavier than in the female figured by Mr. Druce.

Injury. ♂, small piece from anal angle of right hind-wing removing the inner tail.

Genus, VIRGARINA, H. H. Druce.

495. *Virgarina scopula*, Druce.

Sithon scopula, Druce, Proc. Zool. Soc. Lond. p. 353, pl. XXXIII. fig. 2 (1873).

Sandakan (Elwes); Mt. Kina Balu (Waterstradt); Labuan (Low and Waterstradt); Baram, Mt. Lingga and Kuching (Sar. Mus.).

Only recorded from Borneo.

Injury. ♀, large asymmetrical bite removing the anal region of right hind-wing and part of the same of the left hind-wing.

Genus, THRIX, Doherty.

496. *Thrix gama*, Dist.

Neocheritra gama, Distant, Rhop. Malay. p. 462, fig. 128, ♀ (1886).

Thrix gama, H. H. Druce, Proc. Zool. Soc. Lond. p. 678, pl. XXXI. fig. 13, ♂ (1896).

Labuan (Waterstradt).

Recorded from Penang and Sumatra.

Genus, CHARANA, de Nicéy.

497. *Charana splendida*, n. sp. (Fig. 3, ♂).

Charana mandarinus, H. H. Druce, nec Hewitson, Proc. Zool. Soc. Lond. p. 676, ♀ (1895).

Mt. Kina Balu (Waterstradt); Kuching (Sar. Mus.).

1. In the account of his expedition to Mt. Kina Balu in March 1899 (*Journ. Str. Br. Roy. Asiat. Soc.* No. 34. 1900, pp. 82-84.), Dr. Hanitsch records the capture of 47 species of Rhopalocera of which only 4 were Lycaenidae—collected during ten days.

Druce records a single female which differs from the Indian species *C. mandarinus*, Hew., "by having a greater area of white on the hind-wing above and by the yellow on the hind-wing below being nearly all replaced by white; the black angular markings and spots towards the anal angle are larger and more prominent, so it may possibly represent a different species, but until the male is discovered it is impossible to be certain." (*l. c.*).

A fine male was taken near Kuching in March 1911, which differs from the male *mandarinus* in a similar way, so that I have adopted Mr. Druce's suggestion and proposed a new name for the Bornean form.

The male differs from Hewitson's species on the upperside in the following points:—(i) on the upperside of fore-wing the blue area does not extend as far up the cell as depicted in de Nicéville's figure,¹ nor does it reach the first median nervule²; (ii) de Nicéville's figure shows a black mark below the first median nervule which is totally absent in *splendida*; (iii) on the underside of fore-wing the post-discal band is succeeded by a broad hind-marginal band of uniform rufous brown, unrelieved by a dark submarginal line as figured by de Nicéville for *mandarinus*; (iv) the anal region of the hind-wing is white, not yellow (thus agreeing with Druce's description of the female) and (v) the black markings of anal region are distinctly heavier, that nearest the inner-margin being a straight bar, not irregular as shown in de Nicéville's figure.

Injury. ♂, a small triangular excision at anal angle of right hind-wing removing the outer tail. (Vide fig. 3).

498. *Charana? abnormis*, sp. n. (Fig. 10).

MALE. Upperside. Dark fuscous. *Fore-wing:* including cilia, uniform dark fuscous. *Hind-wing:* dark fuscous, except for large anal region opalescent white, extending from 3rd median nervule to inner margin and bordered by dark anteciliary line. Anal angle lobate. Cilia white round anal half, mixed with fuscous for remainder.

Underside. Fore-wing: ochreous, paler towards inner margin, darker along hind-margin and at anal angle. *Hind-wing:* white, spotted with dark brown. Broadly ochreous along basal half of costa, succeeded by a large quadrate ochreous spot reaching the sub-costal nervure, followed by a small ochreous brown spot just before the apex, which forms the first of a post-discal row; the second spot immediately below it, is larger, the third transverse, the fourth, fifth and sixth smaller and darker, sloped towards the inner margin; the seventh V-shaped

1. De Nicéville, *Butterflies of India*, Vol. III, pl., XXVIII fig. 222, male.

2. Hewitson says of this blue region "bounded by the inner margin and the first median nervule." (III' *Diurn. Lep.*, p. 28, n. 4. 1863).

and shifted outwards, the eighth elongate sloping upwards to inner margin. A spot at base of median nervure; another just beyond the cell; a large quadrate dark brown spot below 1st median nervule followed by another nearer the base on the inner margin; a large dark spot on anal lobe, a rough dark line on each side; a large dark spot (exterior to post-discal row) between 1st and 2nd median nervules; ochreous brown spots along hind-margin above 3rd median nervule to apex. Black anteciliary line. Abdomen below ochreous; above dark fuscous.

Exp. al. ♂, 34 mm.

Mr. Druce kindly examined this specimen for me and reported it as "probably new and when perfect has long tails and comes into the *Manto* Group of genera—most likely new genus. Your specimen seems to be a ♂" (*in litt.* March, 1911).¹

The specimen before me has no secondary sexual characters.

Genus, *JACOONA*, Distant.

499. *Jacoona jusana*, H. H. Druce.

Jacoona jusana, H. H. Druce, Proc. Zool. Soc. Lond. p. 609, pl. XXXIV. fig. 3, ♂ (1895).

Sandakan (coll. Druce); Labuan (Waterstradt); Limbang and Kuching (Sar. Mus.).

Only recorded from Borneo.

Closely allied to *J. anasuja*, Felder (from Malay Peninsula and Sumatra), and to the next species (*J. metasuja*, H. H. Druce); and from an examination of the figures and descriptions of these three species, one might suggest that they are but local races of one species. Thus *anasuja* occurs in the Malay Peninsula and Sumatra; *jusana* and *metasuja* in Borneo, the former from Sandakan to Sarawak and the latter on Mt. Kina Balu only. A male in the Sarawak Museum has a thin blue apical band intermediate in width between these last two species.

Injuries. (i) ♂, both tails cut off and neat circular bite removing the large anal spot on left hind-wing. (ii) ♀, large bite diagonally across the left hind-wing removing more than half the wing.

500. *Jacoona metasuja*, H. H. Druce.

Jacoona metasuja, H. H. Druce, *l. c.* p. 609, pl. XXXIV. fig. 4, ♂ (1895).

1. A fine male has just been captured (October 1911) on Mt. Klingkang, Sarawak; it has two short tails, (like the female *Thamala miniata*, Moore, figured by de Nicéville in *Butterflies of India*, Vol. III, pl. XXVIII, fig. 213), the outer of which from the 1st median nervule is 6 mm. long, the inner from sub-median nervure is 5 mm. This feature together with certain peculiarities of the neuration will in all probability necessitate the founding of a new genus as Mr. Druce suggests; this point I hope to settle in the near future.

Mt. Kina Balu (Waterstradt).
As yet unrecorded elsewhere.

Genus, NEOCHERITRA, Distant.

501. *Neocheritra amrita*, Feld.

Myrina amrita, Felder, Wien. ent. Monatsch. Vol. IV.
p. 395 (1860).

Neocheritra theodora, H. H. Druce, Ent. Mo. Mag. Vol.
XXII. p. 155 (1885).

Labuan (Low and Wahnes); Kuching (Ind. Mus.); S. E. Borneo, near Banjarmasin (Wahnes).

Distribution: Malay Peninsula, Nias Island, Billiton and Sumatra.

Var. *theodora*, H. H. Druce, differs from the type by the blue on upperside of male being rather more extensive and of a paler greenish shade. Recorded from Sandakan (Pryer) and Labuan (Waterstradt).

The Sarawak Museum examples are from Mt. Santubong and Kuching and are all referable to this variety.

Injuries. (i) ♂, neat circular excision removing inner tail of left hind-wing. (ii) ♂, both tails evenly cut short. (iii) ♀, an uneven notch out of hind-margin of left fore-wing near the apex and inner tail of left hind-wing cut off.

502. *Neocheritra teunga*, Grose-Smith.

Sithon teunga, Grose-Smith, Ann. Mag. Nat. Hist. ser.
6. Vol. III. p. 317 (1889).

Mt. Kina Balu (Whitehead).

Genus, CHERITRA, Moore.

503. *Cheritra freja*, Fab.

Hesperia freja, Fabricius, Ent. Syst. III. p. 263 (1793).

Cheritra freja var. *ochracea*, H. H. Druce, Proc. Zool.
Soc. Lond. p. 610 (1895).

Sandakan (Pryer); Labuan (Low and Waterstradt); Kuching, Satap, Bau (Sar. Mus.); S. W. Borneo (Ind. Mus.); Sarawak, S. E. Borneo (Druce).

Druce differentiates a variety "from the continental Indian form by the whole of the fore-wing as well as the costal half of the hind-wing below being ochraceous, and by the inner black band towards the anal angle being much broader and less broken."

De Nicéville describes the Indian form thus: "Underside of fore-wing and outer margin anteriorly of hind-wing washed with ochraceous." A long series in the Sarawak Museum shows forms varying from grey-ochraceous to ochraceous and

the sub-anal markings vary in heaviness and degrees of continuity. It seems therefore unnecessary to give a name to the extreme form since all intermediate forms occur in the same locality.

Distribution: India to Burma, Malay Peninsula, Sumatra and Java.

Injuries. (i) ♂, both tails asymmetrically cut short. (ii) ♂, left and (iii) ♀, right tail cut short.

504. *Cheritra pallida*, Druce.

Sithon pallida, Druce, Proc. Zool. Soc. Lond. p. 352, pl. XXXIII. fig. 3, ♂ (1873).

Sandakan (Pryer); Labuan (Low).

Only recorded from Borneo.

Mr. H. H. Druce has examined the type of this species and considers it a distinct species, but nearly allied to *C. freja*, Fab.

Genus, RITRA, de Nicév.

505. *Ritra aurea*, Druce.

Sithon aurea, Druce, l. c. p. 352, pl. XXXIII. fig. 1, ♂ (1873).

Ritra aurea, H. H. Druce, *op. cit.* p. 610, ♀ (1895).

Labuan (Low and Waterstradt); North Borneo, Banting and Kuching (Sar. Mus.).

Also recorded from Perak and Sumatra.

The Sarawak Museum specimens were taken in February, May, June, and from August to November; the females rather more commonly.

Injuries. (i) ♂, neat symmetrical excision in each hind-wing removing both long tails. (ii) ♀, small symmetrical bite from anal end of inner margin of both hind-wings and a small piece out of hind-margin of right fore-wing. (iii-iv) ♀, with one tail cut out. (v-vii) ♂, with one tail cut short or excised.

Group 4. HORAGARIA.¹

Genus, HORAGA, Moore.

506. *Horaga albistigmata*, n. sp.

MALE. *Upperside*. Dark fuscous, with small well-defined white discal patch in fore-wing, and very faint white line bordering anal angle of hind-wing; anal lobe touched with blue, tails white-tipped. *Underside*. Rich ochreous. *Fore-wing*: sharply defined white discal patch, widest across the base of

1. De Nicéville assigned seven genera to this group¹ (characterised by the presence of three tails,) of which six are found in Borneo (the seventh, *Rathinda*, Moore, being confined to India and Ceylon).

the 2nd and 3rd median nervules; whitish along inner margin; a dark anteciliary line. *Hind-wing*. A straight dark line from centre of costa across wing to 2nd median nervule, thence edged with metallic green across to the inner margin. Three spots at anal angle black inwardly edged with metallic green, the central spot is large and dusted with white scales. Dark anteciliary line as in fore-wing. Cilia whitish.

Exp. al. 21 mm.

Type, ♂ (and only known specimen) Madihit hills, Sarawak (Sar. Mus.).

Differs from any *Horaga* I have seen in the absence of any blue tint on the upperside; resembles *amethystus* in having no white band in the hind-wing below, but the ground-colour is totally different.

507. *Horaga corniculum*, H. H. Druce.

Horaga corniculum, H. H. Druce, *op. cit.* p. 611, pl. XXXIV. fig. 8, ♂ (1895).

Mt. Kina Balu (Waterstradt); Malinau and Mt. Matang—2000 ft. (Sar. Mus.).

Confined to Borneo.

Allied to the Javan species, *H. holothura*, Swinhoe. A male in the Sarawak Museum differs slightly from Druce's figure in having the blue reduced and the fuscous margins wider on the upperside of hind-wing; the other male has the white discal patch of the fore-wing just extending below the first median nervule, and on the underside the white band is much constricted.

508. *Horaga affinis*, H. H. Druce.

Horaga affinis, H. H. Druce, *l. c.* p. 611, pl. XXXIV. fig. 9, ♂ (1895).

Mt. Kina Balu and Labuan (Waterstradt); Madihit (Sar. Mus.).

Confined to Borneo.

Druce notes a variation from Kina Balu in which the lower half of the white discal spot on the fore-wing above is rather larger than in the type, and the blue area is rather paler; the single example in the Sarawak Museum has this first characteristic. This species is easily distinguished from *corniculum* by having the fore-wings much more pointed.

509. *Horaga amethystus*, H. H. Druce.

Horaga amethystus, H. H. Druce, *op. cit.* p. 118, pl. XI. figs. 4, 5, ♂ and ♀ (1902).

British North Borneo (W. B. Pryer); near Kuching, August 1911 (Sar. Mus.).

A fine female of this rare species, which agrees well with Mr. Druce's description and figure.



BORNEAN LYCÆNIDÆ.

510. *Horaga maenala*, Hew.

Myrina maenala, Hewitson, Ill. Diurn. Lep. Lye.
(Suppl.) p. 7, pl. III. figs. 85, 86 (1869).

Borneo (Hewitson—British Museum).

Genus, SEMANGA, Distant.

511. *Semanga superba*,¹ Druce.

Ilerda? superba, Druce, Proc. Zool. Soc. Lond. p. 350,
pl. XXXII. fig. 11, ♀ (1873).

Semanga superba, H. H. Druce, *op. cit.* p. 612, ♂ (1895).

Labuan (Low and Waterstradt); Mt. Matang—3000 ft.
(Sar. Mus.).

Distant records it from Malacca, Fruhstorfer from Java,
and de Nicéville from Sumatra.

Genus, CATAPOECILMA, Butler.

512. *Catapoecilma bubases*, Hewitson.

Hypochrysois bubases, Hewitson, Ent. Month. Mag. Vol.
XII. p. 38 (1875).

Catapoecilma? bubases, Distant, Rhop. Malay. p. 459. pl.
XLIV. fig. 26 (1882).

Quop (Sar. Mus.).

The only other recorded example of this species comes from
Malacca and is now in the British Museum.

The single example in the Sarawak Museum agrees exactly
with the underside figured by Distant in *Rhopalocera
Malayana*, but on the upperside differs in having slightly
broader fuscous margins in the fore-wing, more so in the hind-
wing which is somewhat generally suffused with fuscous.

Distant placed this species in the genus *Catapoecilma* with
considerable doubt, having noted that the type possessed but
two tails. The Sarawak example has a third short filamentous
tail at the end of the submedian nervure (the two other tails
are from first and second median nervules) I have care-
fully compared the neuration with that of *C. elegans*, and I
have no doubt that its inclusion in this genus is correct.

513. *Catapoecilma elegans*, Druce.

Hypochrysois elegans, Druce, Proc. Zool. Soc. Lond. p.
Sandakan (Pryer); Labuan (Low and Waterstradt); Ker-
pok hills and Kuching (Sar. Mus.).

Distribution: India, Ceylon, Malay Peninsula and Sumatra
(*elegans major*, Druce); Nias Island (*elegans niasana*, Fruh-
storfer).

1. Druce describes the male as having but two tails; the female is normal
in this respect, having three tails.

It seems to be a local species in Sarawak, only a single female having found her way to the Sarawak Museum previous to 1909. Since then some 20 or 30 have been taken in one locality near Kuching, but curiously enough only one male among them.

The females vary somewhat in the extent of blue on upper-side of hind-wing; in some, reaching almost to hind-margin, in others almost obsolete.

Injury. ♀, a small piece out of each hind-wing just above the anal angle, probably the result of one bite when the insect was at rest with wings closed.

Genus, *BIDUANDA*, Distant.

514. *Biduanda thesmia*, Hew.

Myrina thesmia, Hewitson, Ill. Diurn. Lep. Lyc. p. 32, pl. XIV. figs. 25-27 (1863).

Drupadia fabricii, Moore, Journ. As. Soc. Beng. Vol. LXIII. pt. 2, p. 32 (1884).

Labuan (Low and Wahnes); Sarawak (Wallace); Lawas, ulu Limbang, Simanggang, Sadong, Mt. Matang and Kuching (Sar. Mus.).

Distribution: Burma, Malay Peninsula, Nias, Sumatra and Palawan.

514a. Var. *unicolor*, Staudinger.

Sithon thesmia var. *unicolor*, Staud., Iris, II. p. 111, (1889).

Staudinger describes this variety as differing from the typical form in the underside being dull reddish brown in place of rufous orange. Druce reports this form as common in Borneo and gives the following localities for it:—

Sandakan (Pryer); Kudat (Mus. Druce); Mt. Kina Balu (Waterstradt); Labuan (Low).

A long series in the Sarawak Museum shows a complete gradation between the two forms, the typical form being perhaps predominant. I have taken both forms in one day on Sadong hill. The majority of males are without the dark orange discal patch on upper-side of fore-wing.

Injury. ♂; a small piece from anal angle of the right hind-wing.

515. *Biduanda estella*, Hew.

Sithon estella, Hewitson, Ill. Diurn. Lep. Lyc. p. 31, pl. XVI. figs. 50, 51 (1863).

Biduanda estella, var. H. H. Druce, Proc. Zool. Soc. Lond. p. 614 (1895).

Mt. Kina Balu (Waterstradt).

Distribution: Sumatra and Billiton.¹

Druce records a pair from Kina Balu "which agree well with Hewitson's types from Sumatra, but are somewhat larger."

516. *Biduanda thaenia*, H. H. Druce.

Biduanda thaenia, H. H. Druce, *l. c.* p. 614, pl. XXXIV.
fig. 2, ♀ (1895).

Sandakan (Pryer—coll. Godman and Salvin).

The type specimen is noted as unique; and the male unknown.

517. *Biduanda cinesia*, Hew.

Myrina cinesia, (♂ *nec* ♀) Hewitson, Ill. Diurn. Lep.
Lyc. p. 29, pl. XIII. figs. 18, 19 (1863).

Biduanda cinesia, H. H. Druce, Proc. Zool. Soc. Lond.
p. 614, ♀ (1895).

Sandakan (Pryer); Mt. Kina Balu (Waterstradt); Sarawak (Hewitson); Kuching (Sar. Mus.).

Confined to Borneo.

Injury. ♂, middle tail bitten out of right hind-wing.

518. *Biduanda cineas*, Grose-Smith.

Sithon cineas, Grose-Smith, Ann. Mag. Nat. Hist. (6)
Vol. III. p. 318 (1889).

Mt. Kina Balu (Whitehead).

519. *Biduanda hewitsonii*, H. H. Druce.

Myrina cinesia, ♀, Hewitson, Ill. Diurn. Lep. Lyc. p. 29,
pl. XIII. fig. 20 (1863).

Biduanda hewitsonii, ♀, H. H. Druce, Proc. Zool. Soc.
Lond. p. 615 (1895) *et op. cit.* p. 679, pl. XXXI. fig.
9 (1896).

Sandakan (Pryer and Cator); Labuan (Waterstradt); Kuching and Mt. Matang—3,200 ft. (Sar. Mus.).

Confined to Borneo.

Injuries. (i) ♂, middle tail bitten off right hind-wing.
(ii) ♂, middle tail of right hind-wing bitten out. (iii-ix)
♀, the middle tail in one wing either bitten out or cut off
short. (x) ♀, both tails symmetrically bitten out. (xi)
♀, both tails symmetrically cut short.

1. Mr. P.C.T. Snellen records 22 *Lycænidæ* from the Island of Billiton, of which only the following three are not found in Borneo:—*Niphanda tessellata*, Moore, *Myrina nivea*, Godman, (both Malay Peninsula species) and *Sithon (Drupadia) lisias*, Fabricius, from India and Tenasserim.

519a. *Biduanda hewitserii* var. *parva*, nov.

MALE. *Upperside*. *Fore-wing*: outer half of wing dark brown fuscous; basal region, costa and inner margin narrowly fuscous; leaving small sub-discal patch of dull violet. *Hind-wing*: whole of basal and discal region—from costa to inner margin—fuscous, leaving small touch of dull violet between nervules beyond cell; hind-marginal and anal markings as in type form.

Underside: as in type form.

FEMALE. Differs from type form in size and reduction of white sub-anal band and white anal markings on upperside of hind-wing, which are nearly obsolete.

Exp. al. ♂ and ♀, 24 mm. Expanse of average male and female of type form in Sarawak Museum = ♂ 29 mm, ♀ 33 mm; Druce gives measurements: ♂ 1.4 to 1.3 inch, ♀ 1.5 to 1.1 inch.

Kuching (Sar. Mus.).

The coupling together of these specimens as male and female of the same variety is purely guess-work. The single male was taken in June 1900 and the two females in October 1909.

520. *Biduanda staudingeri*, H. H. Druce.

Biduanda staudingeri, H. H. Druce, Proc. Zool. Soc. Lond. p. 615, pl. XXXIV. figs. 5 ♂, 6 ♀ (1895).

Mt. Kina Balu (Waterstradt).

521. *Biduanda similis*, H. H. Druce.

Biduanda similis, H. H. Druce, *t. c.* p. 616 (1895).

Borneo (coll. Druce).

522. *Biduanda imitata*, H. H. Druce.

Biduanda imitata, H. H. Druce, *t. c.* p. 617 (1895).

Borneo (coll. Druce).

Genus, MARMESSUS, Hübn.

523. *Marmessus moorei*, Dist.

Sithon moorei, Distant, Ann. Mag. Nat. Hist. ser. 5. Vol. X. p. 246 (1882).

Marmessus boisduvalii var. *atra*, H. H. Druce, Proc. Zool. Soc. Lond. p. 679 (1896).

Sandakan (Pryer); Kina Balu (Waterstradt); Lawas and Trusan (Everett); Labuan (Low and Waterstradt); (?) Daat Island (Distant); North Borneo, Lawas, Limbang, Kuching, Tegora and Lundu (Sar. Mus.).

Distribution: Malay Peninsula and Sumatra.

I believe *boisduvalii* and *moorei* are but local races of one species which should be known as *moorei* (the older name). The two races may be distinguished thus:—

(i) hind-wing underside markings composed of black lines enclosing white areas

= continental race, *moorei boisduvalii*.

(ii) hind-wing underside markings deep black

= insular race, *moorei moorei*.

boisduvalii var. *atra*, Druce, I take to be a variety of the insular race *moorei moorei*, characterised by an orange discal patch on upperside of fore-wing. This is nicely demonstrated by a long series of males and females in the Sarawak Museum, in which the prominent orange discal patch of var. *atra* becomes smaller and smaller reaching the final stage of obsolescence in typical *moorei*. The undersides are exactly similar in all specimens male and female.

If this view is correct, this species affords a parallel case of variation to that of *Biduanda thesmia*, (see p. 162).

Injuries. (i) ♂, anal angle of right hind-wing bitten off.

(ii) ♂, small symmetrical bite across the anal angle of hind-wings removing both tails.

524. *Marmessus surindra* H. H. Druce.

Marmessus surindra, H. H. Druce, Proc. Zool. Soc. Lond. p. 617, pl. XXXIV. fig. 7, ♂ (1895).

Sandakan (Pryer); Kinabatangan and Limbang (Sar. Mus.).

524a. *Marmessus surindra*, var. *albula*, H. H. Druce.

var. *albula*, H. H. Druce, t. c. p. 617 (1895).

Sandakan (Pryer); Mt. Kina Balu (Waterstradt); S. E. Borneo (Wahnes).

This variety is also noticed from Palawan.

Genus, *Eooxylides*, de Nicéville.

525. *Eooxylides tharis*, Hübner.

Oxylides tharis, Hübn., Zutr. exot. Schmett. figs. 883, 884 (1837).

Sandakan; Mt. Kina Balu (Everett and Waterstradt); Trusan (Everett); Labuan (Low); Sarawak (Staudinger); Lawas, Trusan, Limbang, Samarahan, Mt. Penrissen—3,300 ft., Kuching and Lundu (Sar. Mus.).

Distribution: India to Malaya—(Peninsula, Nias Island, Billiton, Sumatra and Java).

Very common in Sarawak all the year round.

Injuries. (i) ♂, middle tails symmetrically cut off. (ii-iii) ♂, same absent from left hind-wing. (iv) ♂, from right hind-wing. (v) cut short in left hind-wing and bitten out in right. (vi) ♀, both tails symmetrically bitten out. (vii) ♂, large symmetrical bite removing the whole of anal region of both hind-wings.

526. *Eooxylides etias*, Distant and Pryer.

Hypolycaena etias, Distant and Pryer, Ann. Mag. Nat. Hist. (5). Vol. XIX. p. 268 (1887).

Eooxylides etias, H. H. Druce, Proc. Zool. Soc. Lond. p. 680, pl. XXXI. fig. 12, ♂ (1896).

Sandakan (Pryer and Cator); Mt. Kina Balu (Waterstradt); Kuching (Sar. Mus.).

Confined to Borneo.

The above two species are easily differentiated by the following characteristics:—

- (i) *tharis* (male): upperside of hind-wing has narrow grey-blue inner margin.
etias (male): has light blue inner marginal border extending across the anal half of hind-wing.
- (ii) *tharis* (both sexes): on underside of hind-wing the post-discal black band is thin and of equal width.
etias (both sexes): on underside of hind-wing this black band is usually heavier and always more so towards the inner margin.

Injuries. (i-iii) ♀, right tail cut short in two specimens, bitten out in a third.

Group 5. *LOXURARIA*.¹

Genus, *LOXURA*, Horsfield.

527. *Loxura atymnus*, Cr.

Papilio atymnus, Cramer, Pap. Exot. Vol. IV. p. 82, pl. CCCXXXI. figs. D. E (1780).

Loxura cassiopeia, Distant and Pryer, Ann. Mag. Nat. Hist. (5). Vol. XIX. p. 269 (1887).

Sandakan (Pryer); Labuan (Low and Waterstradt); Lawas, Trusan, Bidi and Kuching (Sar. Mus.); Lundu (Ind. Mus.).

Distribution: India, Malaya and China.

Local in Sarawak and then not plentiful.

Injuries. (i) ♀, both tails symmetrically cut short. (ii) ♂, tails cut short, and a large bite out of each fore-wing, removing three-quarters of the inner marginal region of the left, and hind-marginal region and apex as far as cell of the

1. De Nicéville placed the two genera *Loxura* and *Yasoda* in group; only the first named occurs in Borneo. De Nicéville's next group the *Deudorix* Group may well be merged with *Loxuraria*, as, although somewhat heterogeneous, it is also characterised by a single tail and anal angle lobate. De Nicéville divided his *Deudorix* Group into two sub-groups (a) males without, (b) with secondary sexual characters.

right fore-wing, in which last only small costal and inner-marginal strips of the wing are left.¹

Genus, *DRINA*, de Nicéville.

528. *Drina maneia*, Hew.

Myrina maneia, Hewitson, Ill. Diurn. Lep. Lye. p. 29, pl. XII. figs. 14, 15 (1863).

Labuan (Low and Waterstradt); Matang and Pangga (Sar. Mus.); Borneo (Ind. Mus.).

Distribution: Singapore.

Injuries. (i) and (ii) ♂, left tail cut off. (iii) ♂, both cut off. (iv) ♂, large bite removing anal angle of right fore-wing. (v) ♂, large bite removing the whole of the anal region of both hind-wings. (vi) ♀, left tail cut off. (vii) ♀, small piece out of inner-margin from anal angle of right hind-wing. (viii) ♀, small piece from hind-margin of right hind-wing.

529. *Drina ninoda*, H. H. Druce.

Drina ninoda, ♂ H. H. Druce, Proc. Zool. Soc. Lond. p. 619 (1895).

Drina ninoda, ♀ H. H. Druce, *op. cit.* p. 680, pl. XXXI. fig. 7 (1896).

Sandakan (Elwes); Labuan (Low); Sapagaya (Cator).
"Allied to *D. donina*, Hew." (Druce *l. c.*)

Genus, *LEHERA*, Moore.

530 *Lehera anna*, H. H. Druce. (Fig. 1, ♂).

Lehera anna, ♀ H. H. Druce, Ent. Mo. Mag. ser. 2. Vol. VII. p. 78 (1894).

1. Dr. G. B. Longstaff (*Trans. Ent. Soc. Lond.*, 1905, p. 90 et id. 1908, p. 658) notes of this species in Calcutta, "its wings are much plaited longitudinally, and when at rest its extremely long tails, crumpled look, and brown colour give it quite the appearance of a dead leaf."

My experience of it in Sarawak is rather different. I first saw it beside a small sunny path at Lawas, and on and off for the next three weeks between the hours of 9 a.m. and midday I met with two or three (never more) individuals in this one spot—, but never elsewhere in collecting round the station at Lawas. I frequently noticed how conspicuous it was by reason of its short weak flight in the sunshine and its habit of settling on the upperside of leaves: its ochreous yellow underside rendering it thus conspicuous rather than the reverse, and the conspicuous lightness of its long tails at once destroyed any chance of a resemblance to a dead leaf. The wings were folded erect, in no way "plaited"; the tails together, not folded; in fact, the insect gave me the general idea of being a conspicuously coloured unpalatable insect, not a procreptically coloured palatable butterfly. Curiously enough Dr. Longstaff (*l.c.* 1908, p. 629) mentions an experiment with a closely allied species, *Loxura arcuata*, which tends to support my suggestion. He gave some butterflies to two Mainas in Ceylon some of which the birds ate with evident relish, others they tasted and then showed signs of dislike. Of the *Loxura* he notes: "The bird gave the *Loxura* a few pecks and then let it alone," suggesting unpalatability."

Lehera anna, ♀ H. H. Druce, Proc. Zool. Soc. Lond. p. 680, pl. XXXI. fig. 8, ♀ (1896).

Mt. Kina Balu (Waterstradt); near Kuching and Mt. Matang—2,000 ft. (Sar. Mus.).

Confined to Borneo.

As the male has not yet been recorded, I append a brief description.¹ Curiously enough although some dozen males have been captured in Sarawak, only one female has been taken as yet, and that quite recently (August 24th, 1911); the native collector reported having found it settled on the underside of a leaf.

Upperside. *Fore-wing*: rich steely purple-blue with very narrow dark fuscous marginal border along the costa, a wider hind-marginal border which broadens towards apex. *Hind-wing*: same colour as in fore-wing, with narrow fuscous border along the costa; broader fuscous border along inner margin "thickly clothed with long fur-like modified scales" (as de Nicéville notes in *Lehera eryx*, ♂). Anal lobe metallic green (in some gold-green) slightly extending up inner margin. *Underside*, emerald-green.

Fore-wing: indistinct white line from costa to inner margin rather nearer to hind-margin than in female. White patch along inner margin does not extend above submedian nervure as figured in female. *Hind-wing*: indistinct discal band as in female followed exteriorly by another similarly indistinct light band, two small white marks at base of anal lobe, which is itself jet black. Tail very thin filamentous, dark fuscous white-tipped. This last feature is in curious contrast to the long and stout white tails of the female.

Injury. ♂, large jagged bite removing anal region of left hind-wing.

530a. *Lehera anna* var. *fulva*, nov.

A single male in the Sarawak Museum differing from the type form on underside only, which is rich ochreous instead of emerald-green.

Loc. Mt. Matang, 3,200 ft. Sarawak.

Type ♂ in Sarawak Museum.

Lehera anna is closely allied to the Indian species *L. eryx*, and possibly should be regarded as a local race only of that species. Wood-Mason and de Nicéville describe a single female under the name *Lehera skinneri*, which they say only

1. Mr. Druce has since informed me that the male has been described by Herr Fruhstorfer; I am unable to give the reference.

2. Wood-Mason and de Nicéville, *Journ. As. Soc. Beng.* Vol. IV. pt. 2, p. 369, n. 138, pl. XV. fig. 3 (1886).

differs from *L. eryx* in the underside being clear ochreous instead of emerald-green.

Genus, *ARAOTES*, Doherty.

531. *Araotes lapithis*, Moore.

Myrina lapithis, Moore, Cat. Lep. Mus. E. I. C. Vol. I. p. 48, n. 79 (1857).

Labuan (Low and Wahnes); Mt. Santubong—2,600 ft., and Kuching (Sar. Mus.).

Distribution: India, Burma, Malay Peninsula, Sumatra and Java.

Druce remarks that it is a common species, though it has not been found so in Sarawak.

Genus, *SITHON*, Hübner.

532. *Sithon nedymond*, Cr.

Papilio nedymond, Cramer, Pap. Ex. Vol. IV. p. 19, pl. CCXCIX. figs. E. F ♂ (1780).

Thecla chitra, Horsfield, Cat. Lep. E. I. C. p. 97, pl. I. fig. 5, ♀ (1829).

North Borneo, Mt. Derian (alt. 4—5,000 ft.), Mt. Saribu, Padang and Kuching (Sar. Mus.); S. E. Borneo, nr. Banjarmasin (Wahnes); S. Borneo (coll. Godman and Salvin).

Distribution: Burma, Malay Peninsula, Sumatra and Java.

Injury. ♀, right tail cut out.

533. *Sithon midea*, Hew.

Myrina midea, Hewitson, Ill. Diurn. Lep. Lyc. Supp. p. 6, pl. 3, fig. 81, ♂ (1869).

Sithon valida, Druce, Proc. Zool. Soc. Lond. p. 352, pl. XXXIII. fig. 4, ♀ (1873).

Mt. Kina Balu (Waterstradt); Labuan (Low); North Borneo (Sar. Mus.).

Genus, *DEUDORIX*, Hewitson.

534. *Deudorix epijarbas*, Moore.

Dipsas epijarbas, Moore, Cat. Lep. Mus. E. I. C. Vol. I. p. 32 (1857).

Labuan (Low and Waterstradt); Baram, Mt. Santubong—2,600 ft., Mt. Matang—3,200 ft., and Kuching (Sar. Mus.).

Distribution: India and Malaya.

Sarawak specimens were taken in March, May and June.

Injuries. (i) ♂, small bite from anal angle of right hind-wing. (ii) ♀, a similar bite removing tail, but not the anal lobe.

535. *Deudorix staudingeri*, H. H. Druce.

Deudorix staudingeri, H. H. Druce, Proc. Zool. Soc. Lond. p. 621, pl. XXXIV. fig. 10, ♂ (1895).

Labuan (Waterstradt); Mt. Santubong (Sar. Mus.).

Described from a single example in the collection of Dr. Staudinger. The Sarawak Museum contains two males taken in November. As the upperside markings of *epijarbas* are known to be very variable, I suggest that *staudingeri* may prove to be but a variety or seasonal form of Moore's species.

536. *Deudorix diara*, Swinhoe.

Deudorix diara, Swinhoe, Ann. Mag. Nat. Hist. (6) Vol. XVII. p. 357 (1896).

Deudorix diara, H. H. Druce, Proc. Zool. Soc. Lond. p. 681, pl. XXXI. fig. 14, ♂ (1896).

Mt. Kina Balu (Waterstradt); Quop (Sar. Mus.).

Also noticed from the Jaintia Hills.

The single example (a *female*) in the Sarawak Museum differs from Druce's figure of the *male* in the following points: upperside discal patch in fore-wing smaller; basal and discal region of hind-wing fuscous. Underside: the spot closing cell and the post-discal band are edged with white and the general colouring is much lighter.

537. *Deudorix strephanus*, H. H. Druce.

Deudorix strephanus, H. H. Druce, *t. c.* p. 681, pl. XXXI. fig. 15, ♂ (1896).

Mt. Kina Balu (Waterstradt); Mt. Matang—3,200 ft., Mt. Santubong—2,600 ft. (Sar. Mus.).

Confined to Borneo.

The Sarawak Museum specimens were taken in February, March, May, June and November (a single male from the foot of Mt. Matang).

The female seems unrecorded and so I append a brief description of it.

FEMALE. *Upperside*. *Fore-wing*: uniform fuscous (as in *D. epijarbas*, Moore). *Hind-wing*: uniform fuscous as in fore-wing, but anal region and tail iridescent white. This white patch is developed most between 1st and 2nd median nervules, less between 2nd and 3rd and between 1st median nervule and sub-median nervure; obsolescent above 3rd median nervule. The nervules and edge of wing are delineated by dark fuscous scales. Anal lobe black. Cilia of fore-wing and upper part of hind-wing fuscous, cilia of anal portion of hind-wing white. *Underside* as in male, except that the outer series of spots is a little more regular.

Exp. al. ♀ 45-49 mm. (Sarawak ♂ ♂ 30-42 mm.).

Type ♀ in Sarawak Museum.

General colouring and pattern of upperside very like female *Sithon nedymond*, Cr.

The males vary a lot in development of the rich orange-red patches in both wings.

Injuries. (i) ♂, a small piece from anal angle of left hind-wing. (ii) ♂, a symmetrical bite across the anal angle of both hind-wings. (iii) ♂, a large portion of anal angle removed from left hind-wing. (iv) ♂, a small piece from anal angle of right hind-wing.

Genus, *RAPALA*, Moore.

538. *Rapala deliochus*, Hewitson.

Deudorix deliochus, Hewitson, Trans. Ent. Soc. Lond. p. 352 (1874).

Labuan (Waterstradt).

Distribution: Burma and Sumatra.

539. *Rapala sphinx*, Fab.

Papilio sphinx, Fabricius, Syst. Ent. p. 520 (1775).

Deudorix varuna, Hewitson, (*nec* Horsfield), Ill. Diurn.

Lep. Lyc. p. 22, n. 16, pl. IX. figs. 32, 33 *male*, pl. X. figs. 36, 37 *female* (1863).

Mt. Kina Balu (Waterstradt); Kiou (Hanitsch).

Distribution: East Indies, Sylhet, Burma and Java.

540. *Rapala schistacea*, Moore.

Deudorix schistacea, Moore, Proc. Zool. Soc. Lond. p. 140 (1879).

Deudorix varuna, Wood-Mason and de Nicéville (*nec* Horsfield), Journ. As. Soc. Beng. Vol. XLIX. pt. 2. p. 234, n. 51 (1880).

Kuching (Sar. Mus.); S. E. Borneo, near Banjarmasin (Wahnes).

Distribution: India, Ceylon, Andaman Isles, Sumatra and Java.

541. *Rapala scintilla*, de Nicéville.

Rapala scintilla, de Nicéville, Butt. Ind. Vol. III. p. 461 (1890).

Mt. Kina Balu (Waterstradt).

Distribution: Sikkim and Sumatra.

542. *Rapala varuna*, Horsfield.

Thecla varuna, Horsfield, Cat. Lep. E. I. C. p. 91 (1829).

Deudorix orseis, Hewitson, Ill. Diurn. Lep. Lyc. p. 23 (1863).

Mt. Kina Balu (Waterstradt); Labuan (Low and Waterstradt); Madihit, Limbang and Kuching (Sar. Mus.).

Distribution: India and Malaya.

Injuries. (i) large quadrate bite out of left hind-wing just missing the tail. (ii) a small bite of the same nature but removing the tail.

543. *Rapala chozeba*, Hewitson.

Deudorix chozeba, Hewitson, Ill. Diurn. Lep. Lyc. p. 24, pl. V. figs. 47-48 (1863).

Mt. Kina Balu (Waterstradt); Labuan (Low and Waterstradt).

Originally described from Sumatra.

544. *Rapala pheretima*, Hewitson.

Deudorix pheretima, Hewitson, t. c. p. 21, pl. IX. figs. 27-29. (1863).

Mt. Kina Balu and Labuan (Waterstradt); Sarawak (Hewitson); Baram and Kuching (Sar. Mus.).

Distribution: India and Malaya.

545. *Rapala xenophon*, Fab.

Hesperia xenophon, Fabricius, Ent. Syst. Vol. III. pt. I. p. 272 (1793).

Mt. Kina Balu and Labuan (Waterstradt).

Distribution: India and Malaya.

- 545a. ♀ var. *coerulescens*, Staud.

Deudorix intermedius, var. *coerulescens*, Staudinger, Lep. Palaw. p. 116 (1889).

Sandakan (Pryer).

546. *Rapala barthema*, Distant.

Deudorix barthema, Distant, Rhop. Malay. p. 280 (1885).

Rapala barthema, H. H. Druce, Proc. Zool. Soc. Lond. p. 623, pl. XXXIV. fig. 11, ♂ (1895).

Mt. Kina Balu and Labuan (Waterstradt); Limbang and Kuching (Sar. Mus.).

Distribution: Malay Peninsula.

547. *Rapala suffusa*, Moore.

Deudorix suffusa, Moore, Proc. Zool. Soc. Lond. p. 834, pl. LII. fig. 8 (1878).

Mt. Kina Balu (Waterstradt); North Borneo and Kuching (Sar. Mus.).

Distribution: Burma, Assam and Sumatra.

The two females in the Sarawak Museum differ from ♀ *barthema* in colour of underside being much brighter yellowish-mustard. The hind-marginal line in fore-wing inclines inwards towards the costa more in these specimens than in *barthema*.

548. *Rapala laima*, H. H. Druce.
Rapala laima, H. H. Druce, Proc. Zool. Soc. Lond. p. 624, pl. XXXIV. fig. 12, ♂ (1895).
 Sandakan (Pryer); Mt. Kina Balu (Waterstradt).
549. *Rapala drasmos*, H. H. Druce.
Rapala drasmos, H. H. Druce, t. c. p. 624, pl. XXXIV. fig. 13, ♀ (1895).
 Labuan (Waterstradt).
550. *Rapala domitia*, Hewitson.
Deudorix domitia, Hewitson, Ill. Diurn. Lep. Lyc. p. 19, pl. VI. figs. 6, 7 (1863).
 Labuan (Low and Waterstradt); Santubong and Kuching (Sar. Mus.).
Distribution: Malacca, Singapore, Sumatra and Billiton.
 A fine male in the Sarawak Museum has the lower half of cell in fore-wing markedly pale; in others this discal streak is more obscure. The undersides vary from pale yellow almost to the brilliant mustard yellow of *suffusa*.
551. *Rapala abnormis*, Elwes.
Rapala abnormis, Elwes, Proc. Zool. Soc. Lond. p. 642, pl. XLIV. fig. 2, ♂ (1892).
 Mt. Kina Balu (Waterstradt); Mt. Santubong—2,800 ft., Mt. Matang from foot to summit, 3,200 ft. (Sar. Mus.).
Distribution: Burma and Sumatra.
- Genus, BINDAHARA, Moore.
552. *Bindahara phocides*, Fab.
Hesperia phocides, Fabricius, Ent. Syst. Vol. III. pt. I. p. 282, n. 85 (1793).
 North Borneo and Mt. Santubong—2,600 ft. (Sar. Mus.).
Distribution: India and Malaya.
- 552a. var. *phocas*, Staudinger.
Sithon phocides, Fab. var. *phocas*, Staudinger, Iris, II. p. 114 (1889).
Sithon sugriva, Druce (*nec* Horsfield), Proc. Zool. Soc. Lond. p. 351 (1873).
 Labuan (Low and Waterstradt); Kuching (Sar. Mus.).
Distribution: Celebes and Philippine Islands.
 Mr. Druce kindly identified this variety for me.
 Both type form and variety seem very rare in Sarawak.
- Genus, VIRACHOLA, Moore.
553. *Virachola smilis*, Hewitson.
Deudorix smilis, Hewitson, Ill. Diurn. Lep. Lyc. p. 18, pl. VIII. figs. 22, 23 ♀ (1863).

Mt. Kina Balu (Waterstradt); Mt. Santubong and Mt. Matang (Sar. Mus.).

Distribution: "East India" (Hewitson); Andaman Isles and Palawan.

A long series of males only the Sarawak Museum, chiefly from the summit of Mt. Santubong; taken all the year round; varying in size from 25 mm. to 41 mm. The basal spots on underside of hind-wing are not so filled up as shewn in de Nicéville's figure of the female. The blue areas of both wings are much more reduced than in the female, as pointed out by Druce.

Injuries. Small ragged bites out of anal angle of left hind-wing in two specimens; a third with symmetrical bite from both hind-wings at anal angle and a fourth with a small piece removed from the same region of the right hind-wing.

As this is the last instance of injured Lycaenidae to be noticed it may be of interest to try and draw some conclusions from all the instances so far recorded in this paper.

It will have been noticed that the Sub-Families of Lycaenidae show signs of enemies' bites in varying degrees culminating in the two extremes shown by the *Gerydinae* and *Theclinae*: the former showing practically no injuries at all, while in sharp contrast to them, the latter afford abundant evidence of attacks made by birds or lizards, sometimes on the hind-margin of the hind-wing, sometimes even on the fore-wing, but more especially on the anal region of the hind-wings. From this, two pairs of diametrically opposite conclusions are suggested: (i) that the small, weak, protectively coloured (above and below) *Gerydinae* fall so easy a prey to their enemies, that no injured specimens ever escape; one bite and the incident of capture is over. Their only chance in the struggle for existence lies in their ability to escape notice, and hence we have the sombre coloured uppersides, which render them very hard to see in flight, and the procryptic undersides which answer their purpose as well as, if not better than, those of any other Lycaenid. This would be in accordance with the view that protectively-coloured butterflies are always palatable.

[Against this conclusion however we should note that one frequently catches injured specimens of the presumably palatable Satyrine—*Ypthima pandacus*, Moore, which is weak in flight and easy to capture: in fact I have more notes of injuries to that species than to any other in Sarawak!].

With the *Theclinae* it would appear that in lieu of any scheme of protective colouring, a different method of defence has been evolved, namely that of directing the enemy's attention to a non-vital spot, which is effected by the development of eye-spots and

tails at the anal angle of the hind-wing.¹ Thus, the enemy's attention is attracted by these showy spots and light tails, so that a dart is made in their direction rather than in the vital region of the head or body; but the loss of a portion of the hind-wing is of little moment to the butterfly, who thus escapes. The finding of so many *Theclinae* injured in this manner leads to the second part of our first conclusion, namely that this kind of Lycaenid is recognized among birds and lizards as palatable food, hence the evidence of numerous attacks, of which no doubt a certain percentage prove fatal.

(ii) The 1st of our second pair of conclusions suggested is that put forward now again by opponents of the Mimicry Theories, viz. that butterflies are *not* attacked thus: there are no injured specimens among the *Gerydinae* because birds and lizards *do not attack them*. Why then we ask, their beautifully protected colouring? Are they unpalatable, and so immune from attacks? Again, if so, why their sombre colouring and why do we not get conspicuously coloured *Gerydinae*?

The second conclusion suggested by the evidence of the *Theclinae*, is that they are unpalatable and that their would-be destroyers (principally young and inexperienced enemies) on tasting them have given up the pursuit because of their unpalatability, thus accounting for the number of "sampled" specimens noticed.²

It is altogether beyond the scope of the present paper to go into a discussion of this interesting problem, which would involve a lengthy review of all the external evidence collected by various writers on this and other Families of *Rhopalocera* in many other parts of the world, and it must suffice now to point out that the evidence on the whole favours our first pair of conclusions, although there are also published records apparently in support of the second pair of conclusions.

But like most of these curious theories, *experiments and observations* are wanted badly, be it either to confute or corroborate; and it is admittedly "up" to those of us who live in the tropics to provide the evidence of such experiments and observations.

1. For a lucid exposition of this theory see Poulton in *Essays on Evolution* 1908. pp. 281-3 and 325; also Shelford, *Journ. Str. Br. Roy. Ac. Soc.* No. 35. 1901. pp. 34, 35; also Marshall, *Trans. Ent. Soc. Lond.* 1902. pt. 353-375 and plates IX, X and XI.

A different conclusion is arrived at by A. Tylor (*Colouration of Animals and Plants*. 1886. p. 22), whose theory is (i) that coloration is primarily dependent upon the direct action of light, and (ii) that coloration follows the chief lines of structure. He states that "It is not suggested that the coloration is applied to important parts *in order* to emphasize them, but rather that being important parts, they have become naturally the seats of most vivid colour."

According to the theory of Directive Markings however, the conspicuous coloration at the anal angle of the hind-wing in *Theclinae* has been developed for that very purpose, i.e., *in order to emphasize them*, because they are *not* important parts. Mr. Tylor notes further on, that Natural Selection acts on his fundamental theory "by suppressing, or developing, structurally distributed colours."

2. See note on page 86.

Genus, *SINTHUSA*, Moore.554. *Sinthusa nasaka*, Horsfield.

Thecla nasaka, Horsfield, Cat. Lep. E. I. C. p. 91 (1829).

Mt. Kina Balu (Waterstradt); S. Borneo (Ind. Mus.).

Druce considers this species synonymous with the next (*S. amba*, Kirby).

Distribution: India, Sikkim, Assam, Sumatra and Java.

555. *Sinthusa amba*, Kirby.

Hypolycaena amba, Kirby, Ill. Diurn. Lep. Lye. Supp. p. 32, pl. V. b, figs. 44-46 (1878).

Sandakan (Pryer); Bidi (Sar. Mus.).

Distribution: Mergui, Myitta, Burma, Malay Peninsula and Sumatra.

A single female in the Sarawak Museum, which agrees well with Kirby's description.

556. *Sinthusa amata*, Distant.

Sinthusa amata, Distant, Rhop. Malay. p. 461, pl. XLIV. fig. 20, ♀ (1886).

Sinthusa amata, H. H. Druce, Proc. Zool. Soc. Lond. p. 625, ♂ (1895).

Mt. Kina Balu (Waterstradt); Kiou (Hanitsch); Kuching, Bidi, Tegora (Sar. Mus.).

Distribution: Penang.

Sarawak examples taken from September to December and one in March. The males agree well with Mr. Druce's description.

[Part IV of "The Butterflies of Borneo" dealing with the Papilionidae (*Pierinae* and *Papilioninae*) is in course of preparation].

Explanation to Plate.

- Fig. 1. *Lehera anna*, Druce, ♂ Mt. Matang, November, 1898.
Upperside p. 167.
- „ 2. *Poritia pasira*, n. sp. ♀ Mt. Matang, December, 1898.
Underside p. 122.
- „ 3. *Charana splendida*, n. sp. ♂ Matang Road, March 20th,
1911. Upperside p. 155.
- „ 4. *Purlisa gigantea*, Distant, ♂ Mt. Matang, March, 1898.
Upperside p. 154.
- „ 5. *Lycaenopsis lingga*, n. sp. ♀ Mt. Lingga, May, 1909. Up-
perside p. 96.
- „ 6. *Chliaria balua*, n. sp. ♂ Matang Road, May 20th,
1910. Upperside p. 151.
- „ 7. *Tajuria sunia*, n. sp. ♀ Mt. Penrissen, 3,500 ft., May
19th, 1899. Underside p. 148.
- „ 8. *Nacaduba angusta*, Druce, ♀ Kuching, June 25th, 1897.
Upperside p. 101.
- „ 9. *Logania drucei*, n. sp. ♂ Matang Road, February 23rd.
Upperside p. 85.
- „ 10. *Charana? abnormis*, n. sp. Mt. Penrissen, May. 1899.
Underside p. 156.

All figures $\frac{5}{8}$ of natural size; specimens in Sarawak Museum.